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DR. M. P. BE[illegible]NER,
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DENTAL INSTRUMENTS.

More than twenty years ago it was determined that this house should manufacture instruments of a higher quality and of better finish than had ever been placed within the reach of the dental profession. That there was great room for improvement, and a necessity for a better class of implements to meet the needs of the growing ambition and the increasing manipulative skill of dental operators, admitted of no question. In form, in temper, and in finish, a new departure was imperatively demanded. From that day to this, without regard to expense, we have spared no effort to get out all that skill, ingenuity, and patient industry could produce from steel, in order that we might claim, without fear of successful contradiction, to lead the world in dental instruments.

It is a common remark of physicians and surgeons nowadays when examining our stock of dental instruments, "No wonder American dentistry has made the progress it has. No surgical instruments are to be had which in adaptation to the uses intended, in temper, or in finish are at all comparable to these."

The dental profession has been quick to perceive and prompt to avail itself of these manifest advances, and we are glad to acknowledge that the appreciation thus shown has been a constant stimulus to fresh effort and further progress.

We point to-day with pardonable pride to the universal acknowledgment that our products in Steel—Pluggers, Excavators, Scalers, Burs, Forceps, etc.—excel all other goods of their kind to be found in the world, because we believe the distinction has been earned. We have observed, compared, reflected, and recorded; we have gathered patiently and perseveringly the suggestions and criticisms of the dental profession through many years; we have adopted from every available source improved methods of manipulation; we have made many experiments and modifications, wresting success from our very failures. Upon the outcome we challenge the world to produce like combinations of delicacy, temper, and strength.

As is usually the case with successful efforts of this character, our productions have been extensively copied, and there are more imitations on the market to-day than ever before. The productions of other establishments in our line, during the past fifteen or twenty years, have been mainly imitations of goods first brought out by us. Nearly all the instruments and appliances which have marked real progress in the dental art have been introduced by this house. These imitations, especially of the smaller instruments, are frequently difficult of detection by mere sight, but in use their inferiority becomes painfully apparent to one accustomed to our goods. The small saving in cost is no compensation for the difference in quality, for to the dentist *the best is always the cheapest.*

There is no necessity for any dentist to accept other makes of goods if ours are desired. If ours are not obtainable elsewhere, a direct order to us, with remittance, will receive prompt attention.

THE S. S. WHITE DENTAL M'F'G CO.,

Philadelphia, New York, Boston, Chicago, Brooklyn.

THE

World's Premium Teeth.

A STATEMENT OF FACTS.

Abundant justification for the bestowal of the above apppellation upon our Porcelain Teeth is found in the long line of first awards which they have received.

Starting with a Gold Medal, awarded at the American Institute Exhibition at New York in 1848, the list of testimonials of similar character has steadily grown, no year having passed without contributing its quota. Wherever and whenever our Teeth have been placed in competition they have carried off the honors.

This is emphatically true of the Great World's Fair, beginning with the first (Crystal Palace,) held in London in 1851, and ending with the Cotton Centennial at New Orleans, ten in all. Whenever graded premiums, denoting degrees of merit, have been granted, we have uniformly received the highest.

Three conspicuous examples may be given,—Paris, 1867; Vienna, 1873; Paris, 1878. At the first Paris Exposition Universelle in 1867 a Gold Medal was awarded to Samuel S. White. No other manufacturer of porcelain teeth was similarly honored. At Vienna Gold, Silver, and Bronze Medals were conferred to distinguish degrees of merit; but above and beyond even the Gold Medal was the Grand Diploma of Honor, which was conferred as the "peculiar distinction of eminent merits." Of the hundreds of individual exhibits from the United States, only four were esteemed worthy of this "peculiar distinction." Medals, especially those of bronze, were lavishly bestowed. The Grand Diploma of Honor, the "only really valuable distinction," was awarded to Samuel S. White. It seems necessary, even at this date, to repeat the statement that the highest award received by any other manufacturer of Porcelain Teeth was a Bronze Medal. At the Paris Exposition of 1878, graded Medals were conferred. In the department of Dentistry four medals were granted to exhibitors from the United States. Three of them were of Bronze and were received by our competitors; the fourth was of Gold and was presented to Samuel S. White.

In the light of the foregoing facts a Bronze Medal would seem to have small claim to the honor of "First Medal" or "Highest Award" at either the Vienna Exposition or the Paris Exposition of 1878.

Most of the World's Fairs, besides those already mentioned, conferred but one medal on all alike whose exhibits were deemed worthy of award, relative merit being indicated, if at all, by discriminating reports of the Judges. The American Centennial, Philadelphia, 1876, is a type of these.

The announcement by an exhibitor that he received the "First Medal" at the Centennial is evidence either of misapprehension of the system of awards or of willful intention to mislead. Every medal conferred was of bronze. The highest award could only be determined by comparing the Judges' Reports on the various exhibits. In proof of our claim that we received the highest award, we submit a copy of the Official Report on our exhibit:

Group No. 24. Product, Porcelain Teeth. Exhibitor, Samuel S. White, Philadelphia, Pa.

The undersigned, having examined the product herein described, respectfully recommend the same to the United States Centennial Commission for award, for the following reasons, namely:

1. That while equal to all others in color, texture, and translucency, they are DECIDEDLY SUPERIOR in a faithful reproduction of the physiological characteristics of the natural organs, both in the individual teeth and relatively to the entire set.

2. Their conformation with reference to close and easy adaptation to the maxillary arch shows careful study of the needs of both patient and operator.

3. For the various and numerous deviations from uniformity of arch and outline, simulating the irregularities of nature, and thereby disarming suspicion of their artificial character.

4. For the skillful distribution of tooth-material in such manner as to secure the greatest amount of strength with the least bulk and weight, and for the peculiar form and insertion of the platinum pins. For the maintenance of these good qualities, through an immense variety of size, color, and form of each class of teeth, EXCELLING ANY OTHER EXHIBIT.

Signed,

C. B. WHITE, M. D.
J. H. THOMPSON, M. D.
W. ROTH, M. D.,
Surgeon-Gen'l Saxony, Germany.
ERNST VON FLEISCHEL, M. D.

One Hundred and Three First Premiums—and we mean FIRST; no award being reckoned as a first premium which was not the highest in our class—establishes our claim that our Porcelain Teeth are justly entitled the World's Premium Teeth.

The S. S. White Dental Manufacturing Co.,

Philadelphia, New York, Boston, Chicago, Brooklyn.

Officers of the New Jersey State Dental Society.

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TRANSACTIONS

OF THE

NEW JERSEY

State Dental Society

FOR THE YEARS

1884-5-6.

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COMPILED FROM STENOGRAPHIC NOTES.

NEWARK, N. J.:
THE ADVERTISER PRINTING HOUSE,
1886.

CATALOGUED
AUG 12 1891
E. H. B.

EDITOR'S PREFACE.

The task of editing and revising the Minutes of 1884, 1885 and 1886 having devolved upon the Secretary, in the following pages are presented the results of his labors. It has been his endeavor to leave the Essays in almost their original entirety. Portions of the debates not pertinent to the subjects under discussion, or of interest to the Society, have been omitted. The Secretary has tried to faithfully serve the best interests of the Society, and begs leave to tender his thanks to the members for the confidence so reposed.

Due credit must be given the Financial Committee, Drs. Richards, Palmer and Watkins, for the zeal and industry displayed in lessening the expense of production.

CHARLES A. MEEKER,

Secretary.

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The Law in the State of New Jersey,

REGULATING THE PRACTICE OF DENTISTRY.

AN ACT TO REGULATE THE PRACTICE OF DENTISTRY, AND TO PROTECT THE PEOPLE AGAINST EMPIRICISM IN RELATION THERETO, IN THE STATE OF NEW JERSEY.

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey,* That from and after the passage of this act it shall be unlawful for any person to engage in the practice of dentistry in the State of New Jersey, unless said person has graduated and received a diploma from the faculty of a dental college, chartered under the authority of some one of the United States or foreign governments, or shall have obtained a certificate from a board of dentists, duly authorized and appointed by this act, to issue such certificates.

2. *And be it enacted,* That the board of examiners shall consist of five practitioners of dentistry, who are members in good standing of the New Jersey State Dental Society, provided, that said practitioners have been practicing in the State of New Jersey for a term of not less than three years; said board shall be elected by the New Jersey State Dental Society, to serve for one year; the president of said New Jersey State Dental Society shall have power to fill all vacancies in said board for unexpired terms.

3. *And be it enacted,* That it shall be the duty of this board, first, to meet annually at the time of meeting of the New Jersey State Dental Society, or oftener, at the call of any three of the members of said board; thirty days notice must be given of the annual meetings; secondly, to prescribe a course of reading for those who study dentistry under private instruction; thirdly, to grant a certificate to all applicants who undergo a satisfactory examination; fourthly to keep a book in which shall be registered the names of all persons having certificates to practice dentistry in the State of New Jersey, after the passage of this act.

4. *And be it enacted,* That the book so kept shall be a book of record; and a transcript from it, certified to by the officer who has it in keeping, with the common seal, shall be evidence in any court in the State.

5. *And be it enacted,* That three members of said board shall constitute a quorum for the transaction of business, and should a quorum not be present on the day appointed for their meeting, those present may adjourn from day to day until a quorum is present.

6. *And be it enacted,* That any person who shall, in violation of this act, practice dentistry in the State of New Jersey for a fee or reward, shall be liable to indictment, and on conviction, shall be fined not less than fifty, or more than three hundred dollars; provided, that nothing in this act shall be construed to prevent any person from extracting teeth; and provided further, that none of the provisions of this act shall apply to regular licensed physicians and surgeons.

7. *And be it enacted,* That on trial of such indictment it shall be incumbent on the defendant to show that he has authority, under the law, to practice dentistry to exempt himself from such penalty.

8. *And be it enacted,* That one half of all fines collected shall inure to the informer and the other half to the educational fund of the county.

9. *And be it enacted,* That nothing in this act shall apply to persons who shall be engaged in the practice of dentistry in this State at the time of the passage of this act.

10. *And be it enacted,* That to provide a fund to carry out the provisions of the third section of this act, it shall be the duty of the board of examiners to collect from all who receive the certificate to practice dentistry, the sum of thirty dollars each, of which sum, if there be any remaining after liquidating necessary expenses, the balance shall be paid into the treasury of the said New Jersey State Dental Society, to be kept as a fund for the more perfect carrying out of the provisions of this act; and the board of examiners for their remuneration shall receive from the above fund ten dollars per day for each day of actual service.

11. *And be it enacted,* That this act shall take effect immediately.

Approved March 14, 1873.

A SUPPLEMENT TO AN ACT ENTITLED AN ACT TO REGULATE THE PRACTICE OF DENTISTRY, AND TO PROTECT THE PEOPLE AGAINST EMPIRICISM IN RELATION THERETO IN THE STATE OF NEW JERSEY, APPROVED MARCH FOURTEENTH, ONE THOUSAND EIGHT HUNDRED AND SEVENTY THREE.

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey,* That the first section of the act to which this is a supplement which section reads as follows:

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey,* That from and after the passage of this act, it shall be unlawful for any person to engage in the practice of dentistry in the State of New Jersey, unless said person has graduated and received a diploma from the faculty of a dental College, chartered under the authority of some one of the United States or foreign governments, or shall have obtained a certificate from a board of dentists, duly authorized and appointed by this act to issue such certificates, be amended to read as follows:

1. BE IT ENACTED *by the Senate and General Assembly of the*

State of New Jersey, That from and after the passage of this act, it shall be unlawful for any person to engage in the practice of dentistry in the State of New Jersey, unless said person has pursued a regular course of instruction for at least one year in a reputable dental college chartered under some one of the United States or foreign governments, and has graduated and received a diploma from such college, or unless the said person shall have obtained a certificate from a board of dentists duly authorized and appointed by this act to issue such certificates, and shall have registered his name, and the name of the said dental college, or board of dentists, in the County Clerk's office of the county in which he shall have engaged in the practice of dentistry, within one month after commencing such practice, in a book to be provided and kept for that purpose, in the several County Clerk's offices of the several counties of this State, and for which registry the said County Clerk shall be entitled to demand and receive from each person registering the sum of fifty cents, and any person violating any of the provisions of this act shall be liable to the penalties prescribed in the sixth section of the act to which this is a suppplement.

2. *And be it enacted,* That this act shall take effect immeeiately.

Approved February 17, 1880.

A SUPPLEMENT TO AN ACT ENTITLED AN ACT TO REGULATE THE PRACTICE OF DENTISTRY AND TO PROTECT THE PEOPLE AGAINST EMPIRICISM IN RELATION THERETO IN THE STATE OF NEW JERSEY, APPROVED MARCH FOURTEENTH, ONE THOUSAND EIGHT HUNERED AND SEVENTY-THREE.

1 BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey,* That the first section of the act to which this is a supplement shall be amended so as to read as follows:

[1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey,* That from and after the passage of this act it shall be unlawful for any person not now lawfully practicing to engage in the practice of dentistry in the State of New Jersey unless said person has graduated and received a diploma from the faculty of a reputable dental college chartered under the authority of some one of the United States, and that any person hereafter engaging in the practice of dentistry in the State shall within one month after commencing such practice register his name in a book, kept for that purpose in the County Clerk's office of the county in which he shall have engaged in the practice of dentistry giving his name and the name of the dental college of which he is a graduate, and the name of the place in which he shall have engaged in practice, and for which registry the said County Clerk shall be entitled to demand and receive from each person registering the sum of fifty cents, and any person violating any of the provisions of this act shall be liable to the penalties prescribed in the sixth section of the act to which this is a supplement.]

2. *And be it enacted,* That this act shall take effect immediately.

Approved March 27, 1884.

PROCEEDINGS

OF THE

NEW JERSEY STATE DENTAL SOCIETY.

FOURTEENTH ANNUAL SESSION.

ASBURY PARK, July 16, 1884.

The meeting was called to order by the President, DR. E. H. BUNTING, Sr., and the Rev. E. E. Moran, of Asbury Park, offered prayer.

The Secretary called the roll.

The reading of the minutes was dispensed with, they having been printed and distributed.

The following applications for membership were received and referred to the Board of Examiners: Stacy R. Everett, of Perth Amboy—sponsors, Dr. C. A. Meeker and Dr. F. C. Barlow; Oscar Pozzesi, of Newark—Dr. C. A. Meeker and Dr. F. C. Barlow sponsors; S. T. Slocum, of Asbury Park—sponsors, Dr. James G. Palmer and Dr. C. A. Meeker; Geo. M. Whitfield, of Newark—sponsors, Dr. W. Pinney and Dr. F. A. Levy; A. R. Eaton, of Elizabeth—sponsors, Dr. G. Carleton Brown and Dr. James C. Clarke; A. S. Burton, of Asbury Park—sponsors, Dr. James G. Palmer and Dr. C. A. Meeker.

The following nominations for corresponding members were also referred to the Board of Examiners: W. W. Walker, of New York; M. W. Foster, of Baltimore; R. Finley Hunt, of Washington, and James Truman, of Philadelphia.

DR. HAYHURST moved the visiting members of the profession present be accorded the privileges of the floor.

DR. SCARBOROUGH, Chairman of the Executive Committee, reported that the Committee had arranged the time for holding the election of officers at the opening of the session, 10 o'clock, Thursday morning.

On motion of DR. MEEKER the Executive Committee was directed to notify members of the time of election of officers.

DR. LEVY, of the Committee on Publishing the Minutes, asked further time in which to report. Granted.

DR. MEEKER, of the Committee on securing a place for holding the present meeting, reported the Committee secured accommodations at the Coleman House, and the use of the Amusement Hall free. The report was received and the Committee discharged.

DR. HAYHURST, of the Examining Board, reported: At the semi-annual meeting at Newark we had four candidates, Asher S. Burton, S. T. Slocum, James W. Weeks and Oscar Pozzesi. All passed. Some had been before us previously and were rejected. A candidate was before us yesterday, but the disposition of the case has not yet been decided, supposing we have still power to act until our term expires. There has been no official action taken as to that examination.

The report of the Examining Board accepted.

The Secretary read a communication from meetings of the National Dental Association and the Pennsylvania Society.

The resignation of Dr. Charles Pullin, of Newark, was read and accepted.

A motion of DR. G. CARLETON BROWN that the afternoon of Wednesday be devoted to Clinics. Carried.

DR. HAYHURST, of the Examining Board, reported favorably upon all the candidates referred to the Board.

The report received and the candidates for active membership, A. R. Eaton, Stacy R. Everett, S. T. Slocum, A. S. Burton, Geo. R. Whitfield, and Oscar Pozzesi, were balloted for separately and declared elected.

On motion of DR. LEVY the Secretary was authorized to cast the ballot for the nominees for corresponding membership, which was done, and W. W. Walker, M. W. Foster, R. Finley Hunt, and James Truman were declared duly elected.

PRESIDENT'S ADDRESS.

Gentlemen of the New Jersey State Dental Society:

Another year has rolled around, and we meet again, for the second time, in this pleasant resort, upon the shores of the great Atlantic, where we gather at the fourteenth anniversary of the organization of this Society. It affords me great pleasure to meet you, and with you return our thanks to Almighty God for His goodness and mercy vouchsafed to us in preserving our lives to assemble together on an occasion like this.

We gather to-day as a body of professional gentlemen devoted to the science of dentistry, with a desire to promote the best interests of the profession we have chosen, that by counseling together we may be better prepared to skillfully perform the duties devolving upon us as dentists. If we have this desire uppermost in our hearts and minds, our meeting together will be profitable and beneficial.

We do not assemble to-day with unbroken ranks. It has pleased

Him who reigns supreme to remove from our midst one of our number to that better existence, "where the wicked cease of troubling and the weary are at rest." Dr. M. C. Slocum, of Asbury Park, who was an active member of this Society and met with us last year, died on September 1, 1883. We bow with submission to the will of an all-wise God, and, though we shall never mingle again with our brother on earth, we trust he has passed to that higher and nobler sphere above. I suggest that suitable resolutions be presented for adoption.

The New Jersey State Dental Society has to-day eighty-two active members, and fourteen honorary members; total, ninety-six. I would be glad to see a large accession, both of active and honorary membership, believing, as I do, that Dental Societies throughout the United States have been the means of making great advancement in the progress of dentistry.

I am pleased to see so many eminent visiting brethren among us. Gentlemen, we extend to you a hearty welcome. I hope the members will introduce you and make you feel at home with us. We invite you to take part in our discussions and to all the privileges of the floor. I am informed that very liberal arrangements have been made with the proprietress, Mrs. Coleman, for those attending our Convention, and every effort will be made for the comfort and accommodation of her guests. The noise and confusion noticed below last year, during our sessions, will be suppressed.

Whilst we invite exhibitors here and are glad to have them come and show their goods, we cannot proceed with our discussions unless we can have the attention of members. I hope that exhibitors will abstain, as far as possible, from showing goods during our sessions, thereby preventing much confusion and delay.

Members will please observe the rule of order, not to leave the room during the sessions without permission from the Chair.

Gentlemen, it is not my intention to weary your patience with a lengthy address. I will, as briefly as possible, give some proceedings of our Society during the year past, with a few suggestions, and leave you to transact the business of the Society, trusting you will remember that when so large a number are convened, discussions will arise which will call out leading minds, and differences of opinion should not allow any unpleasant results. I sincerely hope and wish our younger members would come to the front and participate in our discussions, and not wait for older members to assume all the burden. Thus, by a united effort, this Convention may surpass all preceding it in intelligence of action, which has characterized past gatherings of our Society, regarding all the respect due the presiding officer.

At the semi-annnual meeting, held January 10, at my office in the city of Newark, the following gentlemen were present and examined by the Board of Examiners: Dr. John H. Weeks, Jr., of Jersey City; Dr. S. T. Slocum, of Long Branch; Dr. A. S. Burton, of Asbury Park; Dr. Oscar Pozzesi, of Newark. The above gentlemen were licensed to practice dentistry in this State. Dr. Sutton,

of Newton, who had been notified, did not appear. Having been previously notified two or three times, the Prosecutor was ordered to arrest him for practising dentistry illegally, which was done, and he is now under bonds to appear before the next Grand Jury. A report of the Prosecutor will be submitted during our meeting.

The Committee on Legislation were instructed to procure the passage of an amendment to our State law regulating the practice of dentistry, which was successfully done, with the assistance of Dr. Brown and others. I have the pleasure of congratulating you to-day that hereafter no person can come into this State and practice dentistry unless he has a diploma granted by the faculty of a reputable dental college, chartered under the authority of some one of the United States. New Jersey is the only State not recognizing a diploma from any foreign country. The law does not designate who shall decide upon the status of the diplomas. A recent and important decision by the Supreme Court of Illinois affirms the authority of State Dental Societies or Examining Boards to determine what are "reputable" dental colleges where diplomas may be recognized as authority and license for the practice of dentistry. I refer to this in order that some action may be taken by this Society, so there can be no doubt hereafter upon this important point. I think we have laws enough now on this matter, and the law is a good one, and should be enforced to the letter. In order to do so I suggest a committee of five be appointed from different sections of the State to report to and assist the Prosecutor. One man cannot do the work alone without very much interference with his time, for which he gets no compensation. I signed a recommendation for George Buttler, Jr., a resident of New Brunswick, and a student of Drs. Hull and Palmer, from this Society to the Dental Department of the University of Maryland. I am informed that he graduated with honor to himself and this Society.

The Committee on Publications have completed their labors. Five hundred (500) copies of the transactions of this Society for the years 1881-2 and 3, from the stenographic notes by D. W. Craig. have been printed. One hundred (100) copies, bound in cloth, have been sent to members; the balance have been sent to prominent dentists throughout the States and to Europe. The cost was $247. The work is certainly worthy of comment, and shows efficient and able management, for which the Committee are deserving the thanks of this Society. A report of the Chairman will be submitted.

The movement to organize a National Dental Association, to meet annually at Washington, meets with my approval. I received a letter from Dr. B. H. Catching, asking that delegates be sent from this Society to that meeting on July 22, the Chairman to communicate with Dr. Catching, of Atlanta, Georgia.

The Twenty-fourth Annual Session of the American Dental Association will be held at Saratogo, N. Y., August 5, 1884. I hope as many as possible will attend.

Also the State Society of Pennsylvania will be held at Wilkesbarre, on the 19th inst. Certificates will be furnised by the Secre-

tary to any who wish to attend either of these Associations. I hope this Society will be well represented at both places.

Now, gentlemen, in conclusion, I beg leave to thank you all for the honor you have conferred upon me in making me President of this Society. I assume the duties of the office not without apprehensions of failure. I thank you for your attention, and the pleasure of addressing you. I hope I may receive your hearty co-operation and support, and I assure you when I retire from the honorable position to which you have elected me, I shall always feel a deep interest in the welfare and success of the New Jersey State Dental Society.

The President's address was referred to a committee of three, consisting of Drs. Levy, Barlow, and Palmer.

Dr. Levy offered the following resolution, which was carried:

Whereas, A report having been made that one of our corresponding or honorary members has made very disparaging remarks concerning the worthlessness of the certificate issued by the Board of Examiners of the New Jersey State Dental Society, therefore

Resolved, That a committee of three be appointed to institute inquiries and report at a later date.

The President appoints under the resolution the following committee: Dr. F. A. Levy, Dr. G. Carleton Brown, and Dr. James G. Palmer.

The application for membership of Dr. Harry B. Gihon, of Trenton—sponsors, Drs. Palmer and Meeker—was received and referred to the Board of Examiners.

Dr. Levy—The committee appointed to solicit advertisements and publish the proceedings of the Society, would respectfully report that the printing of the proceedings cost $247.00; that the committee secured $109.00 from outside parties and have received $12.00 from members of the Association; that there is yet a deficiency, and they would recommend that an assessment be made of two dollars each member, and that those who have already paid a dollar for bound copies of the proceedings be allowed that much on the assessment.

Dr. Meeker—Being a part of that committee I make as an addition to the report: 243 copies of the proceedings were mailed. A copy to every member of the Society, to all prominent dentists in this country one and some in Europe. Our proceedings having been thus mailed throughout the land and in some portions of Europe.

Dr. Levy—I am sorry to have to do it myself, but I move that the report of the Special Committee on Publication of the Proceedings be accepted and that the committee be discharged. Motion carried.

Dr. G. Carleton Brown moved that the Treasurer be instructed to place this assessment in the bills to be presented this afternoon, and that it be collected with the dues. Motion carried.

Moved that the Committee on the President's Address be instructed to consult with the Examining Board and report to this Association a list of what they consider reputable dental colleges in this country.

DR. STOCKTON—I have no objection to such consultation, but I think it is entirely out of place. That matter belongs to the Examining Board, and I am therefore opposed to Dr. Brown's motion. You have five gentlemen on that Board who are entirely competent to consider that thing and you don't need any more.

DR. PALMER—As the matter in connection with the President's Address has been referred to a committee, I move that until that committee shall have reported this motion be laid upon the table. Motion to lay on the table carried.

The Examining Board reported favorably upon the application for membership of Henry B. Gihon. The report received and the candidate elected.

The Convention adjourned until 3 P. M.

AFTERNOON SESSION.

DR. LEVY, of the Committee on the President's Address reported as follows:

GENTLEMEN—Your Committee beg leave to report as follows: That so much of the address as relates to the death of our late member, Dr. M. C. Slocum, be referred to a committee of three to be specially appointed for that purpose; that as much as relates to the status of dental colleges be referred to the Board of Examiners, and that they be requested to report the names of reputable colleges before the close of this session; that so much as relates to the appointment of a committee of five for different parts of the State to assist the prosecutor, be referred to that officer with power.

F. A. LEVY,
F. C. BARLOW,
JAMES G. PALMER.

DR. G. CARLETON BROWN—I move that the report be received and the committee discharged. Motion carried.

DR. LEVY—The special committee that were appointed to inquire into the matter of the conduct of some corresponding or honorary member would respectfully report that they find no cause for further action.

PRESIDENT BUNTING—If there is no objection the report of the committee will be received without a vote.

DR. SCARBOROUGH—I have a matter that I wish to call the attention of the Society to. It is an advertisement which seems to conflict with the code of ethics. It reads: "Sets of teeth from $10 upwards; all operations warranted." It seems to me to be an unwarrantable system of advertising, and calculated to depreciate

dentistry and injure the profession. I would suggest, without mentioning the name of the member, that the matter be referred to the Executive Committee, to be hereafter reported upon. So ordered.

The report of the delegates who attended the New York State Dental Society's Convention:

DR. STOCKTON—I attended the meeting in May and was very kindly received. While there I had the pleasure of hearing a very able paper by our friend, Dr. Atkinson, on the preparation of the mouth for artificial dentures. I remarked, in regard to that paper, that if the paper had had the smallpox nobody would have caught the disease. He ran through the gamut of protoplasm, bioplasm, and a great many other things. It was a good paper but they did not seem to appreciate it. Dr. Abbott read a very able paper on deciduous teeth. I was very glad to be present, and, so far as I could, represent the State of New Jersey. I certainly received very kind treatment as your representative.

PPESIDENT BUNTING—We will pass to Rule Six, the reading and consideration of essays and papers. The first in order is the "Legal and Moral Responsibility of Dentists in the Administration of Nitrous Oxide Gas," by Dr. J. Allen Osmun, of Newark.

The Secretary read a communication from Dr. J. Allen Osmun, dated July 11th, declining to read his paper before the Society.

PRESIDENT BUNTING—This, I suppose, is an apology for not being present to read his paper. What will you do in the matter.

DR. SCARBOROUGH—I cannot help but think that Dr. Osmun is laboring under a misapprehension in regard to the claim this Society has upon papers read before it under the By-Laws. I am told, in conversation with members here, that the Society would not refuse to any member the privilege of publishing a paper he may have read before it in other journals, or in all the journals; that no member of the Society, nor the Society by its official action, would forbid him taking a copy of his own production and having it published elsewhere. I think Dr. Osmun is under the impression that the Society would claim the exclusive right to the papers read before it, and that the author has no right to it. If the Society does not claim this exclusive right I think Dr. Osmun should be informed of it.

PRESIDENT BUNTING—Reading from the By-Laws: "All essays from active members must be original, or otherwise stated in the programme, and when read become the property of the Society." That is laid down here; still, I must believe as you do, that while they are the property of the Society there is no law that could prohibit a member from having his own matter published in any journal he wished to publish it in.

DR. SCARBOROUGH—I understand that the Society only claims the right to hold the paper and publish it in its official proceedings.

DR. G. CARLETON BROWN—As Chairman of the committee that framed that article I would state that our idea in wording it in that way was that when a paper was read before this Society, and when it was announced in the programme that it was to be read before

this Society, it became the property of the Society. That it was not to be published before the Society convened, or before it was read, but that it might be published afterwards in any of the journals and the Society would make no objection, provided it were published as a paper that was read before this Society; that a paper read before this Society should not be taken and read before one or two other societies as an original essay written for that other society or each one of them, and then be printed in the journals as a paper read before the National Association or some other, when it really belongs to this Society, having been read here first. The intent of the article was not to prevent the publication of papers read before this Society, but to prevent such papers being represented when published as belonging to some other association. All papers read before this Society we want to have published as much as possible, but we want this Society to get credit for them.

Dr. Meeker—Dr. Osmun in his communication says he notified the Secretary that he could not read the paper. I received no official communication from Dr. Osmun that he would not read his paper before the Society. He wrote me a letter in January, after the proceedings were published, asking why his name was mentioned in connection with this matter, and I informed him it was done by a friend of his unintentionally, that no name was mentioned by me whatever. Having no official communication from him that he would not read his paper, of course I inserted his name in the programme for this meeting. After the programme was printed and distributed to the papers and journals he informed me on the street that he was not going to attend the meeting and would not read his paper before this Society.

Dr. Pinney—There seems to be some misapprehension in regard to the meaning of the By-Laws. The By-Laws state that a paper read before the Society shall become the property of the Society, and in view of that some members think they have no right to their own papers themselves. The resolution offered last year censuring a person for publishing his paper after it had been read before the Society was entirely wrong if Dr. Brown's idea of the meaning of the article in the By-Laws is correct. If a paper read before the Society is the property of the Society, and the author has no right to it whatever, then I think that article in the By-Laws should be changed. If the writer of a paper may publish it wherever he likes, as Dr. Brown says, provided the name of this Society is attached to it, that does very well. A member who writes a paper should have the exclusive right to that paper, simply giving the Society the credit of its being read before the Society when it is so read. A paper is its author's own brain work and property, and his ownership of it and his right to publish it wherever he chooses should not be disputed by the Society, so long as he gives the Society its proper credit.

Dr. Stockton—When that paper was published in the *Independent Practitioner* was not the fact stated that it had been read before the New Jersey State Dental Society? I am under the impression that the paper appeared as having been read before us, the same as

with your paper, Mr. President, which appeared in the September number, the proceedings of the Society not being published until after that. Your paper on Æsthetic Dentistry, was published in the number of the journal following the one that Dr. Osmun's was published in.

DR. MEEKER—I sent all the papers I could obtain to the *Independent Practitioner*, in order to have them published.

DR. STOCKTON—In the American Dental Association they have a rule that papers read before that Association shall not be published in any journal until after they have been published in the regular minutes of the Association. Probably that is because the S. S. White Company has some agreement with the Association to publish its proceedings and does not want the papers to get into other journals. We have no such rule in this Society. I think harmony is better that discord, every time, and I would like to offer a resolution something like this:

WHEREAS, There exists some misapprehension as to the facts in regard to the publication of Dr. Osmun's last paper, it is

Resolved, That he be requested to read the paper prepared by him for this meeting at our next annual meeting.

DR. HAYHURST—That resolution is good as far as it goes, but it does seem to me that it does not reach the disputed point at all; it does not settle the question as to whether Dr. Osmun, or any other person, shall have the privilege of publishing his paper after it has been read before the Society. I think it would be well to offer a further resolution, distinctly stating that a person reading a paper before the Society shall have the privilege of offering it for publication afterwards, provided that when so published it shall be stated that the paper was read before the New Jersey State Dental Society.

DR. ADAMS—I offer this:

Resolved, That members reading papers before this Society may have the privilege of printing such papers by mentioning that they were read before the New Jersey State Dental Society.

DR. STOCKTON—I would make that a second resolution; let there be two resolutions and make that the second one.

By request of DR. G. CARLETON BROWN, the Secretary read the two resolutions.

DR. G. CARLETON BROWN—According to the terms of that last resolution a member who is announced on the programme to read a paper has no more right to publish his paper than he had before.

DR. WATKINS—He has no more right to publish it before reading it.

DR. STOCKTON—In regard to Ds. Osmun's paper, he simply sent a copy of it to Dr. Barrett, and it was published in the August number of the journal; it was read here in July and published in August. I would be very much opposed to publishing a paper before it was read. Dr. Osmun does not contemplate that, nor does anybody.

PRESIDENT BUNTING—You will vote on both resolutions at the same time.

The question was put and tho resolutions passed.

The Prosecutor read the following report:

PROSECUTOR'S REPORT.

GENTLEMEN—Your Prosecutor would report the facts of the year, and so far the upholding of the State dental laws. A more than summary of the cases would be of benefit to the members.

CASE 1st—Johannus Van Elderen, a Hollander, residing at Paterson, and advertising himself as the King of tooth-pullers, mesmerizer, clairvoyant and herbal doctor, was complained of by Dr. Jenks during June of 1883. The man was cited to appear before the Board of Examiners last July, but instead wrote a letter saying that he would discontinue the practice and during the fall and winter attend college in New York. During the first part of September of the same year I received one day a package enclosing a tooth recently extracted, with a cavity filled with oxy-phosphate. Accompanying was a statement that the former possessor of the same, a Mr. Iboch, having severe pain therein, presented himself to J. Van Elderen on the Saturday preceding and had said tooth filled, paying therefor the sum of 50 cents. There being no discontinuance of the pain during the balance of that day and Sunday, on Monday morning he proceeded to the office of Dr. B. F. Luckey, who, diagnosing the same, found it to be in a highly ulcerated condition, and enquiring into the facts of who filled the tooth in that state, learned of the above statement. The man wishing immediate extraction it was performed, and Dr. Lucky recognizing the value of the tooth as evidence of infraction of the law sent it to the Prosecutor with the statement that Mr. Iboch would make affidavit to all the above facts. Your Prosecutor proceeded to Paterson on the 26th, and after a personal interview with Drs. Luckey and Jenks went before a Justice of the Peace and swore to a warrant of arrest. The same was executed that evening and the man placed in jail, not being able to obtain bondsmen. The Paterson papers were made the vehicle of a torrent of abuse extended to the Prosecutor. A subsequent visit to Paterson before the Grand Jury, likewise the presence of Drs. Jenks, Luckey, Van Emburgh and Mr. Iboch, resulted in an indictment. After being in jail over a month the trial was called for, and accompanied by the President, a lawyer, and the presence of all the witnesses, the trial was proceeded with, but notwithstanding direct evidence, the production of the tooth and the owner thereof, the direct charge of the judge to convict, etc., the intelligent American jury declared the man not guilty and he was released.

A short time afterwards the Prosecutor was served with a notice of suit, entitled, "Johannus Van Elderon vs. Chas. A. Meeker, Prosecutor, etc.," for malicious prosecution and false imprisonment,

the trial to come off before one of the courts of Essex County.

The Prosecutor obtained the services of Mr. Herbert Boggs, and a stenographer in case of future reference. On the day of trial, accompanied by most of the prominent members of the Society in the northern part of the State, not forgetting the unhappy Mr. Iboch, who so far had received but one dollar for his attendance on courts, loss of time, the badgering of lawyers, etc., so that the man doubted whether he ever had a tooth extracted. Everything in readiness, the trial commenced before the judge, neither side calling a jury. The verdict, which was withheld some two weeks, can be best understood by reading the judge's decision as taken from the daily papers. The judge says:

"The case turns upon the determination of the question as to whether there was reasonable cause for making the complaint in this case, upon which plaintiff was indicted, and, after trial, acquitted. To maintain this suit want of probable cause and malice must be shown, but the satisfactory proof of want of probable cause will warrant this court in inferring malice in the defendant. If there was reasonable and probable cause for the defendant to complain as he did, even if there was malice in the prosecution on his part, the plaintiff cannot succeed. The evidence discloses an acquittal of the plaintiff of the charge.

"This action is not sufficient to sustain his case if the latest decisions of our Supreme Court is to be followed by this Court. In a previous decision of our Supreme Court it was held otherwise. Most of the courts of the various States hold the simple acquittal of the plaintiff as *prima facia* proof of want of probable cause and sufficient to place the defendant upon his defence. The same courts hold that very slight evidence is sufficient to overcome this presumption when it thus arises from acquittal alone. The Court of Errors has not decided the question in this State, but the law as held by the Supreme Court in the later case of Apgar vs. Woolster is controlling in this cause. When the plaintiff closed his case there was slight evidence, aside from the acquittal, of want of probable cause. The defence is that the arrest was founded upon reasonable and probable cause and without malice. It is proven that the defendant is the State Prosecutor of the New Jersey State Dental Association, created under the laws of this State; that he has a county prosecutor or informant in every county who notifies him of those practicing contrary to law. The plaintiff's case was called to the attention of the defendant, and he was notified to file his diploma. He replied that he was not practising dentistry. Subsequently defendant received notice that he was practising dentistry, and that he had filled teeth, receiving money therefrom.

"The defendant went to Paterson," the Judge continued, "and on this information, as a part of his duty, made the complaint before the Justice and Grand Jury, which led to the plaintiff's arrest and incarceration. The defendant was performing an official duty and no notice is shown in the least, and that probable cause existed the evidence of Mr. Iboch on the stand in this case serves clearly to

establish, for in this suit he reiterates his statement and declares that he told defendant, and that it is a fact that the plaintiff filled this tooth and charged and he paid therefor the sum of fifty cents. Probable cause does not mean proof beyond reasonable doubt. It means such facts and circumstances as would lead a reasonable man to believe that the crime had been committed. Such probable cause it seems to me clearly existed in the facts upon which defendant acted. There is a judgment for defendant."

CASE 2d—In July, 1881, one L. W. Sutton, of Newton, was summoned to appear before the Board of Examiners. He made no appearance before the Board but personally informed the Secretary that he would appear *at the next* session and be examined. At the several sessions of the Board since July, 1881, the gentleman has been summoned to appear at the stated meetings in January and July, and upon his non-appearance January 10th of that year the Prosecutor was instructed by vote of the Executive Committee to arrest said Sutton. The arrest was made, and after the change in the law requiring graduation from a reputable dental college, the Board of Examiners left the case in the hands of Dr. J. C. Clarke with power to act.

CASE 3d—Frank S. Hornung commenced the practice of dentistry in Jersey City in May. Complaint was made thereto and upon investigation by the Prosecutor it was found he was a graduate of March, 1884, of the New York College of Dentistry. Not being of age (21) no diploma could be issued, but a certificate was given attesting graduation and the promise of a diploma upon reaching the full age. The gentleman considered it very hard, but the passage of the last supplement to the law stating explicitly that a diploma must be the requisite, the Prosecutor had no other alternative than to order him to discontinue for the present, and the gentleman is now employed by Dr. Clarke.

CASE 4th—In June, 1880, J. W. Van Zant, practicing at Bloomfield, was complained of by Dr. J. C. Hanks. A visit was paid to him, and upon Dr. Stockton's authority he informed me that said Van Zant at his office offered a bribe to him of $100 to procure a certificate. He gave him the best of advice to appear before the Board in July, to which he had been formally summoned by the Secretary; instead thereof, he placed in the Secretary's hands a number of affidavits and circulars in proof of his practicing dentistry previous to March, 1873. The Secretary laid the same before the Board of Examiners at the Mansion House, Long Branch, of that year, and the Board heard the evidence of Dr. A. H. Clark, of Perth Amboy, as to the falsity of said affidavits, of J. W. Van Zant, and also heard the remarks of Dr. J. C. Hanks and E. F. Hanks in relation thereto. At that time the Board came to no conclusion in relation to the matter, tacitly allowing the man to practice. A week ago demand was made upon the Prosecutor for said affidavits, which of course was not recognized, being merely the custodian thereof; thereat threats of legal suit to recover the possession thereof have been made, and upon enquiry, it was said the County Clerk of Essex

County had promised to register said Van Zant, upon seeing said proofs of his practice previous to the passage of the law.

The Prosecutor had a personal interview with the County Clerk and received his promise he would not register any name without strict compliance with the law.

In relation to one H. D. Gihon, of Trenton, formerly in the employ of Dr. Charles Dippolt, considerable time has been given:

He commenced with Dr. Charles Dippolt in 1862 and continued there until March 29 of this year. January 1, 1884 he was associated with Dr. Dippolt as a partner, and as above stated left there March 29, and on April 5 opened an office on State street. The gentleman was asked to appear before the Examining Board by the Prosecutor. Some doubt existing as to the legal status of the case, the fact of his using his name as a dentist on January 1, 1884 would naturally exempt him from the law of March 27 and make him amenable to the laws of March 14, 1873 and February 17, 1880; and the fact that the Examining Board was elected for one year, rendered them still competent to examine candidates coming under the provisions of the statutes of March 14, 1878 and February 18, 1880. The gentleman was on hand and stated his case briefly, and after consultation by the Board the gentleman was examined, passed satisfactory, and as you are aware has now become a member of the Society.

In conclusion, the recent passage of the supplement to our dental law places New Jersey in the very first ranks of the States and societies that are striving to have only qualified and *competent dental* practitioners, and will likewise simplify the duties of the Prosecutor on all cases since March 27, 1884.

Dr. Geo. C. Brown—I move that the report be received.

Dr. J. W. Scarborough—I second the motion, and would have added the thanks of the Society to the Prosecutor for his prompt attention to the business and his self-sacrificing labor in prosecuting illegal practitioners.

Dr. G. Carleton Brown—And we might condole with him in his afflictions, and elect him for another year.

Dr. Hayhurst—We all understand that the office of Prosecutor is one that is very difficult to fill, and I am very much pleased with the zeal and fidelity with which it has been filled. At the same time, with all the labor that has been given to it, with all the backing that the Society could furnish and with everything favorable on the side of the prosecution, you see what the result has been. That notwithstanding the excellent proof that was furnished to the court there has been no successful prosecution. It seems that the community is not ready for the enforcement of the dental law. I remember an instance, and I presume the gentlemen from the upper part of the State will remember it, where, after appearing before the Essex Co. Grand Jury and showing that a certain person was practising in violation of the law, some of the jury in the back part of the room ignored the law and ignored the whole proceedings, and

one of them spoke up, with a German accent, and asked: "Is he a good dentist?" That seemed to be all they thought worth considering; not whether he had violated the law, but the question was: "Is he a good dentist." I think you will find great difficulty in successfully prosecuting any case. I have been told by the Prosecutor for the State of Pennsylvania that it is impossible to obtain a conviction there. The cases taken up have been dismissed on one ground or another, and there has not been a singe case of successful prosecution. I presume it will be will be so for some time to come.

DR. G. CARLETON BROWN—If dentists throughout the State would take a little more interest in having practitioners registered in the County Clerk's offices it would greatly facilitate the enforcement of the law. Dr. Wallace tell me that in Camden there were a number of dentists registered under Dr. so-and-so as their preceptor. When the law says explicity that a dentist must be registered under a diploma from a college, what right has a County Clerk to register him under a preceptor. If a County Clerk has not sense enough to read and understand the English language some member of the Society should instruct him. The clerk of our county said to me: "You tell me about any man who is practicing in this county and who is not registered and you need not take any further trouble, I will make it warm for him."

DR. STOCKTON—Is the gentleman referred to in your report still practicing in Paterson?

DR. MEEKER—No; he has left there. It is really a successful prosecution, inasmuch as he has been compelled to leave.

DR. LUCKEY—I do not agree with Dr. Hayhurst in his statement that the efforts of the Prosecutor have been without any success at all.

DR. HAYHURST—I did not mean to be so understood.

DR. LUCKEY—I am glad to hear you say so. It may not be possible to convict in a court of law, but that is owing entirely to the jury system in vogue; it is owing to the fact that the only men eligible for jury duty are those who lack brains and common sense. A man who is educated and who reads and thinks is not fit to be a juryman according to our laws. In this case at Paterson there was clear and conclusive evidence that the defendant had violated the law, as well as being guilty of mal-practice; it was a very strong case, so much so that the judge charged very strongly against the prisoner; still the jury found no trouble in acquitting the man, acquitting him simply through a feeling of sympathy, because he had been hounded by this close corporation, as the profession is styled: it is said that they are exclusive, and form a close monopoly, and that they are hedging themselves in by protective laws, seeking their own elevation and emolument while caring nothing for the protection of the people. As a matter of fact, although this Paterson man was not convicted before the jury, the efforts of the State Society, through their Prosecutor, resulted in his quitting practice and leaving the city. A number of other cases in different parts of the State have had a similar result. If these cases could be tried

before a judge instead of a jury there would be less trouble in enforcing the law, as was the case in the suit against Dr. Meeker, the Prosecutor, which resulted in a decision in his favor. If these cases could be brought before a judge and not before ignorant juries I think the profession would be protected, and the people also, by the conviction and punishment of these ignorant and lawless practitioners, who travel about the country with a belt strung full of forceps, offering to extract teeth for anybody.

DR. HAYHURST—If I expressed myself so poorly as to be understood as holding it to be of no use to prosecute these cases I am very sorry. I had no such idea. My views correspond exactly with what has been said here. The failure to convict before a jury is, I think, because the community is not ready for it; they do not understand the question, therefore the difficulty, I did not say the impossibility, of enforcing the law through the courts.

DR. GEO. C. BROWN—I think you will all agree with me when I say that the profession, as a profession, stands very much higher today than it did in the year 1873 when we had our first dental law passed. At that time I was one of the committee appointed by the Society to present the proposed law to the Legislature. We had considerable difficulty in getting the Legislative Committee, to whom it was referred, to act upon it. It was some two or three weeks in the hands of that committee before they would report it. I made two or three visits to Trenton to look after the bill, and after awhile I called upon a friend of mine, a member from our county, and told him I wanted that bill reported one way or the other. He said he would see the committee and if the bill was not reported by them he would bring the matter before the House. I then called on the chairman of the committee, and you all know the result, that we got the law. It is unquestionable that since the passage of that law the standard of dentistry in this State has been raised, and has constantly been going higher and higher; and the men who have come into this State from other States to practice have been very careful how they hung out their shingles unless they brought a sheepskin or obtained a certificate from our Examining Board. The cases that the Prosecutor has reported to-day extend over a period of three or four years, and they are the only ones that have been brought to the attention of the Prosecutor. In regard to this one that was brought before the courts, although it was decided against us, yet it was virtually a triumph for us, because the man, as I understand, has quitted practice and left the State. The recently passed law gives us a still higher position. I believe we are the first and only State to pass a law making it obligatory upon every man who commences the practice of dentistry in the State to be a graduate of some reputable dental college. That certainly is a very great step in advance. It happened that I was placed on that committee as an extra member at the meeting of the officers and the Examining Board in January last, and it was my pleasure to visit the city of Trenton in the interest of our bill after it had been defeated in the Senate by a very large majority. I interviewed a num-

ber of the Senators, and my talk with them was exceedingly pleasant. A number of them merely said, "Is it right? Do you want it? Do the members of your profession require a law of that kind?" I said, "We do." "That is sufficient; I will vote for the bill," was the usual answer. When the bill was called up for reconsideration it passed by a vote of seventeen to none. That was a great triumph for us and for the good standing of the profession in the State of New Jersey.

PRESIDENT BUNTING—I was present at the trial in Paterson and I fully concur in the remarks of Dr. Luckey and the Prosecutor. The case was well tried and the judge charged the jury directly against the prisoner, but sympathy for the man got him clear.

Motion to accept the report of the Prosecutor carried.

PRESIDENT BUNTING—We will now have the pleasure of listening to a paper by Drs. Geo. C. and G. Carleton Brown, of Elizabeth, on "The Use of the Patrick Regulators."

THE USE OF THE PATRICK REGULATORS, ILLUSTRATED BY MODELS AND DIAGRAMS.*

It is not our intention to read a paper, but as we have been using this system of regulating to a considerable extent we purpose giving you a few cases that we have successfully treated by that method, and which are shown in these models and drawings. It is claimed by Dr. Patrick that he can regulate any case of irregularity with his apparatus. It may be that he can, but I doubt it. I think it is impossible with one appliance to regulate all cases that come to the hands of the dentist; but at the same time this is as near a universal regulator as I have yet seen. It consists of a gold spring, representing as near as possible the shape of the arch, which is applied outside of the teeth, and the idea is to bring all the teeth to this line. If it is a case where the teeth are inside they are drawn out to that line by means of ligatures; and if they stand outside of that proper curve they are forced into line by the pressure of the spring and wedges, by the slow and positive method. We have found in using this regulator that it really takes a much shorter time to complete a case of regulating (although a much longer time from putting in the appliance to the time the teeth are perfectly straight), counting the time of holding them in position, which we all agree is the most tedious.

The first case which I wish to call your attention to is that of a young lady of about 22 years of age. This case was commenced on July 30, 1883. The mouth was very narrow through the centre, so very narrow that the teeth projected far out of the mouth and the upper lip would not cover them at all. The young lady had a sis-

* The Editor regrets the Drs. Brown could not furnish wood-cuts of the models of this essay. The large number and cost has no doubt been the cause.

ter who was considered very pretty, and the features of the two were very much alike, with the exception of the mouth; but that projection of the teeth gave this one a repulsive look, of which she was very much ashamed, and she was willing to go through anything in order to get them into position. Our first plan was to spread the arch, and for that we used a modification of the Coffin plate. We made a black rubber plate to fit accurately on the teeth, bearing a little harder on the bicuspids and molars, with a piano wire spring in the centre. We put that on and let it go for some time. We made two or three of those plates; the patient being sick in the meanwhile. That was continued from July 30 to October 26, at which time there was a marked change, not so much in the teeth as in the mouth generally, by reason of the spreading of the arch. We then applied Patrick's system in this way: You will see in the diagram that there is one bicuspid on the left side, and to that we fastened the anchor-band of the appliance, which is simply a metal band made to fit the tooth accurately and slipping around on the outside band. To this is fastened a little screw, which you can clamp up, holding the bar and band in any position after you get the appliance on. On the other side we put what is known as the T. As it was placed on there the inclination was to draw those two bicuspids out, which was done. Afterwards we changed the anchor-band to the first bicuspid on the right side, putting the T on the left side between the second bicuspid and the first molar, and that brought those into position. At the same time what is known as a hook, which slips off and on in the same way, was put over the lateral for the purpose of drawing it out into position. As the space becomes less from pulling the teeth out it is necessary to use a smaller size hook. The canines were forced back into position and then the appliance was brought to bear upon the centrals. Every little while the band was tightened up, and finally the case was brought to the shape you see in the second diagram. The teeth were all made to conform to the arch, the lips now cover them perfectly, and the change is so great that the young lady is often taken for her sister. The case was discharged on April 1st, 1884.

Dr. S. C. G. Watkins—Was the centre line preserved in that case?

Dr. Brown—It was very nearly. Perhaps there is a little deviation. The apparatus was taken off on the 1st of April, 1884, the patient calling occasionally after that to see if there was any inclination of the teeth to fall back, as these cases are about the hardest to hold in position after you get them there; the inclination is to fall right back into the old position, as there is nothing to hold them.

Dr. G. E. Adams—Is that a central or a lateral on the right side?

Dr. Brown—This is the central; the lateral is missing. That I did not have anything to do with.

This second case was commenced on January 14, 1884. The first

bicuspid on the right side was extracted, then the appliance was put on, with the T on the left side and the anchor-band on the right, starting with the use of a T which brought the pressure to bear on the right canine principally; at the same time bringing the hook over and fastening it to the extreme corner of the left canine. As you can see in the diagram, and more clearly in the cast, that tooth was coming down far out of position, standing right across from the bicuspid, and the idea of putting it so far forward was not only to pull the tooth up, but to twist it. That was done, gradually changing the axis of the tooth. We started with the use of what is known as H, No. 24, which was changed for 23, then 22, 21, and finally 19 was used. No. 19 brought it nearly into position, and when we discharged the case it was in the shape that you see in the last cast. This tooth had not grown sufficiently to be brought any further into position. The canine touches the lateral, and is in its proper position except that it is too far in. As soon as it comes down far enough to admit of putting a different appliance on I will draw it right into position. The case was dismissed on April 3, 1884.

The third case is one of those that do not look very serious, but are terribly hard to manage. You see that every tooth in front had to be twisted; the axis is wrong in every one of them. We put on the Patrick Regulator, but as soon as we got some of the teeth into position we found that others had got out, and it seemed impossible with the appliances of Dr. Patrick to properly regulate that case. That deciduous tooth, the left canine, which was giving the most trouble, was finally extracted. We brought the central into position by using Patrick's wedges, a set of double wedges, coming from different directions and pressing upon each other and upon the tooth, being confined by the band. We extracted the right deciduous canine finally, and made a band to go around the left lateral with a movable attachment. To this was fastened a rubber running up to the band. There was no further trouble, and the tooth was drawn directly into position. We took up this case on November 24, 1883, and it is not quite completed at the present time. The teeth are very nearly straight. The young lady is away on her vacation. The arch is perfect, except that the teeth are a little twisted. We use rubber a great deal in connection with the appliance. The band is the principal part of the whole thing; it gives you what we have felt the need of, a firm basis to hitch to and work from. The great trouble has been to hold the teeth in position. When you would get everything fixed nicely something would give way, and the work would be to do over again. To this apparatus you can fasten rubbers or anything else and keep them in that position all the time; there is not a particle of trouble with it. I think it is an improvement upon Dr. Verrier's apparatus, as you do not need to see the patient so often. Taking this as the principal part of the device I think any person with a little ingenuity can bring almost any case of irregularity into proper shape.

Dr. C. S. W. Baldwin—How often do you require to see the case?

DR. BROWN—That would differ according to the case. Some cases may go two or three weeks, and others I want to see every two or three days. Sometimes the patient comes in every third day, but I may not touch the case more than once in two weeks.

DR. BALDWIN—Does the appliance interfere with keeping the teeth clean and the gums healthy?

DR. BROWN—Some do not keep their teeth clean, but I think that persons who are inclined to keep their teeth clean will keep them clean with this appliance on. Most of them manage it a great deal better than they do when wearing ligatures and rubbers.

DR. PINNEY—Dr. Patrick says there is no pain connected with it.

DR. BROWN—There is less pain than is incident to any other method of regulating that I have used, but there is pain. You cannot push teeth around in that way without having a little pain.

DR. GEO. C. BROWN—This is the case of a young lady about 20 years of age. You notice that the lateral incisors have been crowded in by the centrals. They gradually grew worse and worse for a number of years, until she determined to have something done to improve their unsightly appearance. Upon examination we concluded that in order to get the teeth into position it would be necessary to remove one of the bicuspids. The anchor-band was attached to the second bicuspid and the T passed between the two bicuspids on the other side. The appliance was put on June 15th, 1884, and was not removed until July 14. When removed the case was in the condition you see here in the diagram. Here are two models that will illustrate the case more fully.

DR. EATON—What did you mean by taking that tooth out?

DR. BROWN—There was not sufficient room, and it was removed in order to make room. The centrals were lapped over the laterals so much that it was impossible to get them out between the centrals and the canine, and it became necessary to remove the bicuspid in order to get the laterals out into the arch. When the apparatus was removed every tooth from one point to the other was in contact with the band, so that they formed a perfect arch. The lady is delighted with the change that has come over her face.

This case is that of a boy about 12 years of age. The two upper centrals projected so that they lay on the upper lip, and the lips could not cover the teeth. His teeth were very much crowded, and in order to get room to bring the centrals into position we were obliged to remove the second bicuspid on the right side and the first bicuspid on the left, which was a dead tooth. I first made a band to fit this molar and drew the canine back so as to gain room. I then applied the band, which was about the middle of May. Last evening, about nine o'clock, I took an impression and got up this model. This diagram was made yesterday afternoon before we obtained the impression, and it does not show the teeth in as good position as they really are, as seen in the cast. You will notice that of the four front teeth two had to be drawn in and two drawn out. It caused considerable inflammation but that soon subsided. The boy reported about three times a week for examination. He com-

plained very little about the discomfort of the band. It required no change for a week or ten days sometimes. The laterals were drawn out by rubber bands attached to the band that passes around the mouth, and the pressure of that band on the centrals forced them in at the same time; there was a counteraction of forces, one pulling out and the other pressing in. In two or three months from the time I applied the regulation piece the teeth were in the position you see in the model. By the use of this appliance you can change teeth to almost any position you please.

This case, No. 3, gave us more trouble than any other case we had. The right lateral was very much out of position, but by tying a ligature of floss silk around the neck of the tooth and passing it around the bar the tooth was readily turned. The left lateral was of very peculiar shape, and it was impossible to get a ligature attached to it. We had great difficulty in fastening the gold band around the tooth, owing to its peculiar shape. Finally, by taking soft oxy-phosphate and putting it over the tooth, and pressing the band over that and holding it until the oxy-phosphate hardened, the band was secured as nicely as could be desired; it never moved from the time it was put on until we cut it off. By putting on the band a little loose and letting the oxy-phosphate harden around it you can then attach your rubber band to the arm of the metal band and turn a tooth clear around, or to any position you please, and there is no danger of the band becoming loose. I do not believe it is possible to find a worse tooth than that to attach a band to, and I do not know of any other way we could have turned that tooth in the socket. This one is still to be turned a little to complete the regulation, which will be easily done.

Dr. G. E. Adams—Have you a model of that case?

Dr. Brown—We have not. The models that you see here are taken from the original casts, which we did not like to bring here, and are not as perfect as the originals from which they were taken. We simply present these cases as samples of different varieties of irregularity that we have had to deal with in our practice. You can apply the Patrick Regulators to almost any kind of case, and a little ingenuity in adapting it to the case will enable you to bring the teeth into position.

Dr. S. G. Wallace—I have a case of a gentleman 45 years old. When he came to me in July, 1882, I found the inferior centrals and laterals very much loosened by an accumulation of tartar. I removed the tartar and was obliged to extract the left central, the gum and process being so much absorbed that there was scarcely anything to hold it. The three remaining incisors were in a similar condition, and it looked as though he must lose them, but I thought possibly they might be saved and the space closed up. I undertook to do it, and by the positive process I brought the teeth into line and closed the space up as you see it now in the cast. In ten weeks from taking the case in hand the appliances were removed and the work accomplished. Knowing that the subject of regulating would be discussed at this meeting I took an impression

of the mouth yesterday and prepared this model. I found the mouth in a healthy condition, the tissues somewhat restored, and the teeth and gums perfectly solid. It is nearly two years since the work was completed. You will notice that the second bicuspid and two molars incline inward. I did not attempt to do anything with them. That may have been caused by masticating mostly on that side, or it may have been the result of the person sleeping on that side with his hand under his face, as many persons do sleep. In regulating this case and closing up the space I used French tubing, placing it over the central and lateral, letting it come down to the margin of the gum and securing it with ligatures. I then made a band of gold for the outside, similar to Patrick's, attaching ligatures to the first bicuspid on each side, and also a band for the inside, forming the same circle, which was attached to the canines. The central and the lateral stood edgewise, with the approximal surfaces inclined inward. Before adjusting the bands I slipped a piece of tubing over both, so that when it was in position the tubing was drawn through the space left by the extracted lateral. This held the bands in position and drew the teeth into line until the space was closed and the work completed. I saw the patient five times during the operation, and, of course, the gums were treated in that time. This method I have used in many cases, with satisfaction to myself and pleasure to my patients.

Dr. George C. Brown—I would like to ask if any of the gentlemen present have had experience with the Patrick regulators, and, if so, whether it has been favorable or otherwise.

Dr. C. S. W. Baldwin—Four years ago, before I heard of the Patrick regulating system, I applied an apparatus made very much on the same principle. I made a silver band and attached to it at either end pieces of rubber that fitted the molar teeth perfectly; two holes were drilled through the rubber, and it was tied to the molars. The teeth I had to regulate were the central, lateral and cuspid. The lateral stood much inside of the arch, the central had to be twisted, and the cuspid had to be drawn in. The natural tension of the band drew in the cuspid very readily. I used rubber tubing to draw the latural out; and to twist the central I used a cord, formed into a slip noose, and so attached as to draw on the proper side of the tooth, the other end being tied to the band. That very soon turned the central incisor to its proper position. I do not know as it was as difficult a case as those the gentlemen have spoken of. I think I was something like seven months in regulating that case. I had great difficulty in getting the patient to wear this band on the outside of the teeth; she was a young lady, and naturally objected to the disfigurement. It was a very successful and satisfactory case of regulating.

Dr. F. C. Barlow—I have a case somewhat similar to that, that I have been working on for some time with metal plates, and without much success. I found it a very difficult thing to turn the teeth, always applying a rotary action. Only last week I took hold

of Dr. Patrick's apparatus, and I have it on the case now. The patient did not object to wearing it.

Dr. B. F. Luckey—I want to say a good word for the Patrick regulator. I have been handling it for the last three or four months in drawing teeth into position, and also in rotating them. I have rotated a central incisor that pointed directly out of the mouth, getting it in very nice position.

Dr. C. S. Stockton—I have never used the Patrick regulators, nevertheless I am very much interested in the remarks of the Drs. Brown, for the reason that this apparatus is one that you can buy at the dental depots and have ready at your hand, and is therefore a great convenience. I think I shall try it. I have used for drawing in projecting front teeth an apparatus something like it, which the patient can wear and adjust with more ease and comfort than they can this. If you take out the first bicuspid, as I did sometime ago in a case, apply a band around the first molars with a nut attachment, then extend a band around the arch with a screw attachment, and give your patient a little key, with directions to give that screw a turn once a day, until the pressure is felt. The case I speak of was regulated in about six weeks, the space being entirely closed up. I saw the patient but once a week, and then did nothing; the patient does the whole work. I have two cases of that kind now. In one I took off the apparatus in about four months, and one is wearing it now. Dr. Dodge, of New York, reports recently a case of a gentleman who had worn away the back teeth so that the front teeth had been forced out of position, and when the back teeth had been built up and restored so they articulated as they formerly did, after the lapse of twenty years these teeth fell back to what was their normal position. Therefore the question arises: how long must you wear these regulators in order to bring the teeth into position and *keep* them there? Both of these cases I have spoken of have been very satisfactory to the patient. Nothing is more disfiguring to a person than protuding front teeth, and there is no work the dentist has to do which gives more pleasure to his patients or makes them firmer friends than the regulating of such cases. Take the case spoken of by Dr. Brown, where he restored the beauty of his disfigured patient so that she could be mistaken for her always pretty sister; nothing he could do for that woman would secure her gratitude so surely as that. I have had more pleasure and profit in using the Coffin plate than in using any other regulating apparatus. I saw Dr. Coffin in London, and he took the trouble to show me a large number of models, over one hundred certainly, of cases of regulating, and from an examination of them I am convinced that the cases are very few where you cannot use his device. Dr. Watkins had a case some time ago, which I saw at his office in Montclair, where he wanted to draw in the lower front teeth, and he made a piece of that kind. He covered the molars and bicuspids with a rubber plate, which is a very necessary part of the operation, having a bar running across inside the arch, and the teeth were drawn in by means of rubber bands attached to them and to this

bar. I regulated a case in a similar manner some time ago, using piano wire for the bar. By covering the teeth that are not to be moved they are held firmly in position, there is no giving away; the bands and wires pull and push the mal-position teeth where you want them, while the rubber plate holds the others in position securely, making a basis from which to draw the wanderers into place. Without having had experience in the use of Dr. Patrick's apparatus, I know of no other that is equal to Dr. Coffin's.

DR. S. C. G. WATKINS—As Dr. Stockton has mentioned my name I will tell you about the case he referred to. It was a boy about twelve years of age, whose lower incisors closed outside of his upper ones so that the upper incisors touched the lower gum inside. His chin was thrown away forward, and his face had a very peculiar expression, as you can readily imagine. I applied a plate which covered the lower back teeth, so as to give a grinding surface and open the mouth sufficiently to allow the lower incisors to pass by the upper ones. I then placed rubber rings on a bar that run across the plate inside, tied silk floss around the projecting teeth and secured it to the rubber rings so as to draw them tight. By using silk floss instead of rubber around the teeth you are not bothered by the band working down under the gum and causing inflammation, because the floss will stay just where you put it. In this case I saw the boy once a week for nine weeks, changing the apparatus and cleaning each time. At the end of nine weeks I removed the apparatus, telling the boy to close his mouth and keep it closed, so that the upper incisors would close over and prevent the lower ones from returning to their former position, if there should be any such tendency. The effort of the lower teeth to get back to their old position pressed the upper ones out considerably. The lower ones moved back so that they stood erect. I took the apparatus off last January, I think, and everything is lovely so far. They cannot get back unless they crowd the upper teeth far out, which is not likely to happen. The boy's speech, as well as his appearance, is very much improved.

PRESIDENT BUNTING—I notice Dr. Atkinson; we should be pleased to hear a few words from him on this subject.

DR. W. H. ATKINSON—I have listened with much interest to what has been said, as I always do when I get among the old blue hen's chickens. I am delighted to see the progress that has been made and the intelligent expression of the knowledge of principles that has been manifested here this afternoon. I have very little to say, except upon a point that has been overlooked, and is a most important one in regulating teeth. Wherever teeth in their occlusion hold other teeth out of line, the mouth must be opened far enough to relieve that point. Incidently two or three have referred to something which indicated that they had learned that it was necessary to put something on to the teeth that were not to be moved, that would keep the mouth open far enough to permit those that had to be moved to be transferred to their new position. When that is done teeth can be transferred to any extent, and without even ten-

derness, much less pain. I have not time to go into details to defend or prove the verity of the assertion I make, but I know what I say, and that wherever you have tender teeth in these operations you have done your work imperfectly and not intelligently. The point is well taken as to the bars that are used externally and which describe the arc of an ellipse in which the teeth should stand, and every method which looks in that direction has more or less intuitive intelligence in it. But the great point is to find the teeth that are not to be moved, if any do occlude rightly, and if they do not, then the method described by Dr. Carleton Brown should be followed until those teeth are brought into position. When they have been brought into the desired position they should be held there until re-consolidation of the alveolar process takes place. What is called decalcification, or solution of the lime salts, has to take place every time you remove a tooth; and if you hold the teeth in position until re-consolidation takes place, then when irritation comes on you do not get such an example as that referred to by Dr. Stockton, of teeth wandering after twenty years, if you have your occlusion right. When teeth are out of line they need to be brought into line so as to occlude, and be able to do their share of the work. Dentists are too much afraid of using the corundum wheel in trimming the points of teeth that have not been worn down, so as to be equal with those that have been worn. They do not see that the teeth occlude in a proper manner so as to perform the function of teeth. In moving teeth we need not take nine months to do it, nor nine weeks, if you follow the line of instruction. Get a model of the mouth and study it; be sure you are right and then go ahead. You can adapt your fixture to the circumstances of the particular case you have in hand. If you have not genius enough to do that, for God's sake send it to Dr. Brown, or somebody else who has genius enough. Take your impression, make your model, and then study your case; make up your mind what teeth are not to be moved, then make a reese metal cast base plate that will give you an occlusion so that you can chew upon it; and to this attach a bar of platinum or iridium, passing around the outside of the arch; mark on this bar the points to which each tooth is to be drawn, and there punch holes through the bar for the reception of the rubber bands that are to draw the teeth in the required direction, and never change it. My Boston boy (Dr. Watkins), spoke of changing it every week. It is better to make the holes into slots by sawing out the upper part of the bar down to the holes, to prevent the checking of the rubber rings; countersink each side of the holes, and with a corundum burr polish them off nicely, the idea being to keep the band that goes around the neck of the tooth from going far enough to interfere with the dental ligament or festoon of the gum, but just far enough to get hold of the tooth. Slip the other end into the little slots in the bar. The teeth are to be drawn out to the required position plus a little, so that there will be a little room for them to fall back; and when they fall back they will all be occluded each one against its antagonist, and stand like staves in a

barrel. They are, like the staves of a barrel, champered a little, and when they fall back and close up in line, after being drawn but a little beyond where you want them, they will probably not need anything in the shape of coopering at all, the occlusion will hold them in place. If you trim the teeth that are not worn to conform to those that are, the occlusion will be perfect. Then apply a little tincture of calendula, kiss your patient good-bye and tell her to come and see you in a week. It is not the amount of pressure that you bring to bear upon a tooth that accomplishes the object you have in view, but the continuousness of it. My soul yearns when I think of twisting and turning away for three or four or five years to get a tooth in position, as we used to do. Let the machine do its work, and there will be no tenderness of the teeth, if you don't keep biting upon them. What men call inflammation, is not inflammation at all; it is simply a retrograde metamorphosis of the tissues so as to make them soft enough, and near enough to the embryonic condition, to be guided into the position required by the new circumstances; and the process of re-consolidation of the softened sockets is a repetition of the metamorphosis from the embryonic condition to the adult state of the tissues. If there is any disposition of the moved teeth afterward to return to their former position, you may be sure you have not understood your case. Cases in which extraction is desirable are so rare that they do not deserve attention. In just a few cases of hereditary, where there has been a crossing of diverse races it may be necessary, but as a rule in these cases of irregularity there is nothing to warrant the extracting of teeth.

DR. GEO. C. BROWN—How would Dr. Atkinson manage this case without extracting.

DR. ATKINSON—There is nothing like asking questions. I have not seen the model of the lower jaw in the case, but I would take an impression of the mouth and make a cast reese metal plate to open the bite so the teeth will not occlude but pass each other. Then get your outline where you wish to have the teeth, plus the amount necessary to carry them beyond that line, and proceed as I have already stated. After the teeth have been brought entirely out you should nicely polish off Nasmyth's membrane with a fine paper disk, then polish with a soft rubber disk and some powder and let the teeth come together. That is the way to do it without extracting a tooth.

DR. M. W. FOSTER—Did I understand you rightly that you apply direct ligatures to the teeth?

DR. ATKINSON—Yes, sir.

DR. FOSTER—And without tenderness?

DR. ATKINSON—Without tenderness.

DR. EATON—Will you explain how you keep the rubber from impinging upon the soft parts?

DR. ATKINSON—I will. By having the bar stand in such position as to prevent the rubber from creeping against the festoon of the gum.

DR. GEO. C. BROWN—I understood you to say that teeth can be

moved without causing inflammation, and in less than nine weeks.

DR. ATKINSON—I did.

DR. BROWN—How is it that we have so much trouble in separating teeth with rubber for the purpose of filling, and how would you suggest that the operation be performed so as not to produce soreness?

DR. ATKINSON—Without any pushing.

DR. BROWN—I don't care how little pushing you do, when you move teeth they will be sore.

DR. ATKINSON—You are very much mistaken. In your experience you have been blundering.

DR. BROWN—I would ask whether any other gentlemen here have been able to separate teeth any distance without soreness.

DR. ATKINSON—I have seen teeth separated with rubber so that I could put my little finger in the space. I can teach you, or any man, how to do it. If you come and stay with me a week I will show you. I know how kind nature is at times. If you but understand the histological and pathological conditions of the tissues you will know what makes this tenderness, and you need not have it at all, even in children.

DR. BROWN—Can you separate teeth sufficiently wide for filling without tenderness?

DR. ATKINSON—Yes.

DR. BROWN—In how long a time?

DR. ATKINSON—In five minutes.

DR. BROWN—What with?

DR. ATKINSON—With wedges. The man who will separate teeth day after day for the purpose of filling is to be pitied.

DR. BROWN—I pity the patient of the man who does it in five minutes.

DR. ATKINSON—I have known persons who were so wedded to their false notions that they would not acknowledge a demonstration. When under sharp interrogation by one who has the love of God in his heart and intelligence enough and cheek enough to tell the truth, they go back on it.

DR. BROWN—I have got cheek enough to do that.

DR. STOCKTON—In the case I spoke of, where the upper incisors protruded very much over the lower ones, so much that you could place your finger between them, it was necessary, in order to make a successful operation, to extract the first bicuspids. Dr. Atkinson's idea is that only in very rare cases is it necessary to extract teeth, which is true; but this was one of those cases where a man who says his prayers does extract teeth. A case, maybe, where a Dutchwoman had married an Irishman, or something of that kind.

DR. ATKINSON—If Dr. Stockton says it is so I am quite willing to believe it, and consider it one of the exceptions to the rule.

DR. JAMES TRUMAN—Without wishing to enter into a discussion with Dr. Atkinson on the doctrine he has enunciated here, I must protest against the promulgation of such theories. I hold it to be impossible to move teeth without producing irritation, and if this

be carried to excess it ends in violent inflammation. The process of wedging teeth, and separating them in five minutes, is one of the most reprehensible practices, in my opinion, ever introduced into the profession. The irritation produced is excessive. All teeth can be moved to a certain limited extent through the elasticity of the periosteum, but if it is carried beyond this destruction must follow, in proportion to the amount and length of time of the application of the force. One great danger, not to be overlooked, is strangulation of the pulp at the apical foramen, which is liable to be produced by a sudden movement. Will Dr. Atkinson explain how this is to be avoided by the use of the wedge, when driven between teeth to produce rapid separation.

Dr. Atkinson—It takes intelligence to comprehend. How does he get the elasticity of the periosteum that he speaks of? It is not elasticity of the fibrous connective tissue of the periosteum, but the pressing of the neurine in the fine nerve filaments and the blood in the capillaries that are distributed through the meshes of this connective tissue, that give way by pressure and thus set up a retrogressive metamorphosis, by which the lime salts in the sockets are dissolved and the teeth allowed to move. I did not say I would move the teeth at one clip, but that I would do it in five minutes. Take the stiffest teeth, put in a wedge gently at the cutting edge so as to strain just a little, then insert one near the gum and tap it gently until the first has been relieved, and so, by successive taps upon each wedge alternately, you will get the room you want. How do you get that room? You get it by mechanically impinging upon the vessels that carry the fluids through the fibrous connective tissue of the periosteum, and you get it without inflammation and without irritation. If I cannot do it I will give you a Delmonico dinner. Men say "inflammation" and "irritation" to cover the damned ignorance they have that cannot tell what inflammation is or what irritation is. Irritation means scratching, and sometimes means a rebuke. When you move a tooth slowly the blood that is in the capillaries and the neurine that is in the nerve filaments is expelled from every one of the nerves and capillaries, and when the pressure is relieved those currents will come back without the faintest blush of tenderness. It is just the same when your elbow is asleep, as the saying is; pressure has pushed that little waxy portion away, causing the nerves to jump and tingle, and when the waxy portion returns to its place and the nerve currents go on continuously, then that sensation ceases. Let us work on earnestly and take counsel of one another, and not keep on saying "pure milk" when we mean milk. It is time that dentists vindicated themselves. They are doing more good than all the medical men, and in the fullness of time it will be acknowledged that through them has come the demonstration of the principles of medicine in the practice of dentistry, and don't you forget it.

Dr. G. Carleton Brown—In speaking on this subject this morning a gentleman asked me on what I depended most to retain teeth in position, and I replied, their articulation. If I had said

that in my remarks here I would have had Dr. Atkinson for my friend.

DR. ATKINSON—If you had said occlusion, yes.

DR. BROWN—That is what I should have said.

DR. C. S. STOCKTON—Dr. Parmley Brown, of Flushing, has a very beautiful piece of mechanism here, an upper set of teeth on celluloid, for your inspection.

EVENING SESSION.

The Secretary called the roll.

Dr. Carl Heitzmann, of New York, was nominated for honorary membership; sponsors, Drs. F. A. Levy and W. Pinney. Referred to the Board of Examiners.

The Examining Board report favorably upon the nomination of Dr. Carl Heitzmann for honorary membership.

On motion of DR. HAYHURST the Secretary was authorized to cast the ballot of the Society in the case of Dr. Heitzmann.

PRESIDENT BUNTING—Gentlemen of the Convention, I have the pleasure of announcing to you that Dr. Carl Heitzmann, of New York, is elected a member of this Association.

DR. J. HAYHURST—Mr. President and Gentlemen, as one of the delegates appointed to attend the Convention of the National Association at Niagara Falls last summer, I beg leave to report that I attended to that duty, and was present at all of the sessions. The sessions were very interesting. Some very valuable papers were read and the discussions were particularly interesting to me, some matters being discussed that I had not undertaken to investigate, One that I may mention was the action of arsenic upon the tissues. including, of course, its action as used in dentistry. Another exceedingly interesting lecture to me was one in relation to the construction and use of obdurators, and the philosophy of the voice and sound, all of which was exceedingly interesting and instructive. A better exposition of the subject I think I never heard, although I am a student of accoustics and have been all my life. Altogether I was well pleased with the proceedings.

PRESIDENT BUNTING—We are very thankful to the Doctor for his report, and glad that he attended the meeting to represent our Society.

DR. J. W. SCARBOROUGH, Chairman of the Executive Committee, reported as follows:

The Executive Committee met for the transaction of business at the office of the President, Dr. E. H. Bunting. Members all present. The Secretary and Dr. Levy were made a committee to make arrangements for the annual meeting at Asbury Park in July. The Committee instructed the Prosecutor to proceed against Dr. L. M. Sutton, of Newton, for practicing in violation of law. The case of Dr. Alexander McKirgan, against whom charges were read at the

last annual meeting for violating the code of ethics, was fully considered, he having been duly notified of the meeting and invited to be present. Failing to do so, the Committee unanimously recommend the Society to expel him. The case of J. Van Sant, who started to practice in Bloomfield, and who was duly notified to appear before the Examining Board and failed to do so, was left in charge of the Prosecutor. On motion it was agreed that all costs, outside of the advertisements, of publishing the proceedings, be raised by assessment of a pro rata tax upon the members.

Report accepted.

DR. STOCKTON—Mr. Treasurer, did not Dr. McKirgan send a letter of resignation enclosing his fees; did he not resign?

DR. GEO. C. BROWN—Yes, sir; last year, after charges were preferred against him. He said that rather than be expelled he would resign.

DR. G. M. MERRITT—I understand the report to recommend that he be expelled. I doubt very much the right of this Society to do that.

DR. LEVY moved to accept the report of the Executive Committee. Carried.

DR. G. CARLETON BROWN—As a member of the Executive Committee I would like to make a little explanation in regard to this matter. Charges were preferred against Dr. McKirgan, and the matter was referred to the Executive Committee with power to act, the mover of the resolution explaining that he meant the Executive Committee to have power to expel the gentleman if they thought best. The Committee wrote to Dr. McKirgan appointing a time and place of meeting to hear him. He failed to appear there. A second time we notified him, the Committee met, and he failed to appear. I think three times in all the Committee notified him to appear. The Committee was ready each time to hear him, and he never came. His letter of resignation was sent after charges had been preferred against him; he thought to get over the expulsion by sending in his fees and a letter of resignation. Dr. McKirgan was brought before the Society on charges of advertising, and I think the public should understand that, as one of our rules prohibits advertising, we have the courage and consistency to live up to and enforce it. It is not necessary that the Society take any formal action in regard to publishing the fact, but simply to see that the papers shall get hold of the fact that Dr. McKirgan was expelled from the Association for breaking its rules in this respect. I think the public should know that we live up to our rules.

DR. MEEKER—I think it is well enough to live up to our rules, but I doubt the propriety of advertising such a thing in any of the papers of the State. While it is proper for us to expel a member if he has done wrong, we may do wrong if we go any further. The Committee gave this gentleman a chance to appear before them and explain the matter, and he refused to do so, and they have brought the matter before the Association with a recommendation for the

gentleman's expulsion. That is proper enough, but I do not think it would be right to advertise in the papers the fact that we had expelled him.

DR. PALMER—I understand that Dr. McKirgan sent last year his dues. May I ask if that was sent after notice had been served upon him that charges had been preferred against him, or before? My impression is that his resignation and dues were sent after he had received notice of the charges against him.

DR. BROWN—I think it was afterwards. I am not sure.

DR. SCARBOROUGH—The charges were made on the last day of last year's Convention here. I do not know when the money and resignation came. I made those charges myself, before the close of our Convention last year. I would say, as a member of the committee that made this report, that so far as I understood their intention, it was not the purpose of the committee to advertise the thing in the papers.

DR. LEVY—I do not think it would be very dignified to publish in the papers the fact that a member had been expelled, but I do think it would be both fair and just to ourselves that every dental association or society in this country should know of that expulsion and the cause of it; and I think the Secretary should be directed to notify them.

PRESIDENT BUNTING—I believe your motion was merely for his expulsion.

DR. LEVY—That is all.

DR. WATKINS—I do not think we have a right to do anything further than expel the man; and if we are going to expel him let us do it and have done with it.

Dr. LEVY's motion to expel Dr. Alexander McKirgan from the Society was put and carried.

DR. JAMES G. PALMER read a paper, entitled

HIGHER DENTAL ATTAINMENTS.

Considering the position that New Jersey has recently assumed, and the passage of our new law in regard to the practice of dentistry, it has seemed to me that we, who have any regard for the dignity of our profession, and who desire to advance its interests as a whole and not as a part, have a better opportunity than ever before afforded us to enhance that dignity and assist that advancement if we will only take the necessary pains. I take it for granted that the most, if not all of those here to-day, have a greater or less degree of respect for the profession of their choice; that they have a certain degree of love for it, and that they respect it as it elevates and dignifies them in the eyes of the community at large. I may be speaking from my own standpoint too much, but I should be loath to believe that there was anyone here who had not a certain degree of admiration for his chosen profession, and who would not be glad to do all in his power to advance its interests. That such are the

facts, I think is proven by the presence of such numbers at our meetings; by the fact that society after society is being formed; that our membership is increasing; that our periodicals multiply; that such an increase of interest is evinced on all sides year after year.

You will ask, what has all this to do with higher dental attainment? Simply this: we must pay more attention to the ability and attainments of those whom we admit into or induce to come into our ranks. By that I mean to refer to the young men whom we employ in *any* capacity in our office, whether as students or workmen. From their number are to come, subsequently, those who will take our places, and upon whom we must depend to carry out whatever plans we may have laid for the advancement of our profession. We cannot ignore their claims upon us. I think that many of us have been too lax in regard to this matter. We admit to the study of dentistry those who, while bright and intelligent and quick, need more preparation in the elementary branches of their education. I do not believe that anyone can know too much. I do believe that the man who passes through his collegiate course at any good classical college before he enters upon the study of his future profession, be it hard theology, medicine or dentistry, will eventually attain a higher position, than the man who has not had such good educational advantages. There may be exceptions, but this will be the rule. Then, too, such a one will have an innate regard for dignity and honor in his profession, enabling him *at once* to come to the front in whatever profession he may enter. I do not by any means mean to disparage those already engaged in the practice of dentistry, and particularly those who have never had the opportunity to qualify themselves as thoroughly as they would undoubtedly have done had they had such an opportunity.

But in New Jersey hereafter, no one may begin the practice of dentistry without a degree from some reputable dental college. I think we have in this present state of affairs a grand opportunity to advance the interests of our profession, and add to the standing of our State Society. Let us see to it that the young men who come into our offices and under our care and guidance, shall have a thorough knowledge of all that will be required of them. Let us see to it that they are already proficient in at least a common school education before we allow them to enter our office. Let us assist them in their studies. Then at the proper time let them attend lectures. *When* they enter upon the practice of their profession they will have higher ideas of the dignity they have to uphold, and so shall we have caused others if not ourselves to achieve higher attainments in our chosen walk in life.

Dr. R. Finley Hunt—Mr. President and Gentlemen, I hoped when I came here not to be called upon to show the little I know. Before proceeding to speak upon this subject of higher dental attainments, I desire to thank the members of the New Jersey State Dental Society for the honor that they did me to-day in electing me a corresponding member of the Society. I do not say that out of

compliment merely, for I feel what I say when I say that I consider it an honor. I desire also to speak in behalf of the other gentlemen who received a like honor at the same time I did. I think everyone of them would have risen to offer their acknowledgements and thanks if they had not been waiting for me, as the oldest of the number, to speak for them. Permit me, therefore, to return their thanks also to the Society.

I must in the first place congratulate the State of New Jersey, and the Dental Society of New Jersey, upon the fact that they have a law now which embraces that feature which should exist in all dental laws in all the States, and that is that no person, after the date of the passage of the law, shall enter the profession unless he shall be in possession of a diploma from a reputable dental college. The object we have in view is to properly educate young men who desire to come into the profession, and to send them out into the word prepared to do honor to the profession and do service to the human race. It has long been an idea and aspiration of mine that when we send out our graduates from the colleges we should send them out not only able to perform the necessary operations in the practice of their profession, but so well educated in their previous life as well as in the college, that in assuming their important position in the profession and before the world they would be able to reflect credit upon their alma mater and upon their profession. In order to do this it is necessary that all persons who enter a dental college, as well as those who enter any other college or similar institution, should have a good foundation in general education on which to build their professional education in the college, and on which to build their reputation in after life. I have advocated, together with a number of my friends in our section of the country, for a long time a preliminary examination of all persons who present themselves for matriculation in a dental college, and for the reasons I have just stated. But, in the condition of affairs in our country with reference to dental schools, it has been impossible to carry out that idea without making too great a sacrifice, because human nature is human nature all the world over, and probably there is as much of it in our profession as in any other, and if a dental school should set the noble example of requiring a strict preliminary examination of all candidates for admission it would cut itself off from a considerable number of students, and the income necessarily derived from them, and that is a powerful motive in human nature. I think, however, that the time is coming, and I hope it will soon arrive, when the system of education in our dental schools will be uniform in every respect, uniform in the qualifications required of the matriculant, uniform in the length of time to be spent in the college, and uniform in the standard of the examinations of graduates. I will not pursue that point further, but will simply state that I look to the meetings to be held this summer, the meeting of the representative of the various dental colleges in New York city on the 4th day of August, and the meeting of the National Board of Examiners at Saratoga on the 8th day of August, with a great deal of hope that

they will be able to act, both separately and in concert, in such manner as to bring about a satisfactory arrangement of all these disputed questions, and in such manner as will inure to the best interests of the profession in the direction of the higher dental attainments of which Dr. Palmer speaks. That we shall have higher attainments is a self-evident fact, because there is no limit to be placed to human knowledge or human acquirements; certainly we have by no means reached the perfection of knowledge in our profession; therefore any movement that seems adapted to promote that end and object so desirable, higher attainments in our profession, should be taken hold of by us in our individual capacities and in our associate capacities as societies and dental institutions of learning.

The time has passed when the granting of diplomas upon an examination simply, without an attendance upon the lectures of the college, was a matter of policy or necessity. Years ago, when the first dental college in the world was started, it was a matter of necessity as well as policy to open the doors of the upper grades in our profession to those who had already, by their own unaided labor and research, attained a first position which ranked him among the first in the profession. At the time of the establishment of that college there was of course no diploma, there were no regular graduates, yet there were many men who stood at the top of the profession as the profession then was; and had they happened to have lived in this later day they would have been among the first in the profession as it is now, because the same ambition and the same genius and the same love of their profession which placed them in the front ranks then would have gained for them the same relative position to-day. I speak of such men as Dr. Chapin A. Harris; and I feel like never allowing an opportunity to pass without paying a respectful and grateful tribute to the memory of that great and good member of our profession. We owe him a debt, which, as we can never repay it, we should never forget.

I desire here to compliment and congratulate Dr. Palmer on the ability shown in handling his subject so well in the very short space that he allowed himself. I do not want to flatter or to pay empty compliments, but I must say that I never heard the subject handled so well and so fully in so small a space.

It is probably necessary, in order to take proper steps toward higher dental attainments, that we should direct our attention mainly to the subject of general dental education. There is the place where the foundation is laid for higher attainments in the college and in future professional and social life. It is necessary at this time, and from this time forth, that there should be a change in this respect. In making that change there are a great many details to be considered, and those details are at the present time the subject of discussion in our profession throughout the country. One of those details is the time of study that should be required of one who enters a dental college unprepared in any way except by a good English education at least. And with respect to that, while a good

English education is absolutely necessary, a knowledge of Latin and Greek would not be out of the way, but would be of great advantage. I speak from experience. The little knowledge that I acquired of Latin and Greek in my early days has been of inestimable service to me through life. Our language is such a derivative language, is made up so largely from other languages, that the form of a word never before seen will indicate its meaning to one who is familiar with or has even a limited knowledge of the languages from which it is derived.

I think, Mr. President, that the questions that are now agitating our profession are not fully understood, and I desire to say just here, inasmuch as I have been officially mixed up a good deal with these matters, that I and those who are officially connected with me, have no idea that a course of two years' lectures is by any means too long for the acquirement of a proper knowledge and skill in dentistry by one who enters upon its study *de novo*. On the contrary we believe that three years is not too long, and we believe that in many cases four or five years is not too long, and we believe that in other cases any number of years would be too short for certain persons to acquire the requisite knowledge and skill in dentistry.

I desire to say here, before closing, that as for myself and those who are connected with me officially in the cause of dental education, we will in the future, as we have been in the past, be found working as far and as fast as circumstances will admit for a higher standard of dental education and for the elevation of our profession generally. In the future we will be found with the foremost in the advocacy of the adoption of all judicious and well considered measures which may be instrumental in placing our profession on the plane where it should be.

Dr. W. H. Atkinson—I think it is very manifest that we need a higher education of dentists, for the continued reiteration of dental education has become monotonous to me. It is "dental education," "dental knowledge," dental this, and dental that, all the way through, when we don't mean anything of the sort. We mean the education of dentists, and if a man has a good English education, which means that he has the foundation upon which the English language stands, it is not useful to be continually repeating these phrases and tithing mint and cummin, while neglecting the weightier matters of the law whereby we shall be able to understand the organs upon which we are mainly called to do our work, and thereby bring sorrow or joy to those who are in our hands. You know the enthusiastic hold that I have taken upon one man in his efforts to bring our knowledge to the foundation of our work through histology. Without histology we will never be competent dentists. We may have a mass conception, but we will never have a clear discrimination between a healthful and a diseased manifestation of the functions pertaining to the teeth and their connections. If we are to get a higher education, let us take a new deal

and ignore the old text-books. You say, "Oh, yes, Atkinson has said that *ad nauseum*." True, and we have to say our prayers *ad nauseum*, and we have to breathe *ad nauseum*, and we have to exercise most of our faculties *ad nauseum*, unless we have an appetite for the thing, and if you have an appetite for knowledge it will never go against your stomach, but you will take hold and work until you are master of it. It was always so, that those who esteem themselves learned have rejected the inspiration that comes clearly to the unlearned, as exemplified in the case of a Southern planter, whose darkey came home radiant with joy from meeting one Sunday. His master said to him, "Pomp, what is the matter with you?" "Massa, I'se been to meetin' and had a good time, mighty good sermon." "What was the sermon about, Pomp?" "About the final perseverence of the saints." "What do you know about the final perseverence of the saints, Pomp?" "Well, I can't tell much about it in Massa's way, but think I can explain it in my way." "Well, let us hear your way." "Well, Massa, lay hold upon de Lord Jesus Christ and hold fast, and never let go." Now, my doctrine is to lay hold upon the foundation principles that underlie our work, the knowledge of which shall make us able to do good work in our profession, and to hold fast and never let go. And let us not assume that we have reached the limit of knowledge; let us remember our own lack of education in earlier years, and let that recollection stimulate us, the moment we get an idea or an inspiration, to communicate it to the next man we meet; and when the histologist and neurologist gives us new light and reveals new truths let us lay hold on them and never let go until we can take a stronger hold.

Dr. M. Whildin Foster—Mr. President and Gentlemen, I suppose no subject is of more importance to one who labors as a teacher in a dental college than that of dental education. It is a subject upon which I have held peculiar views. Views that may not coincide with those of some of the gentlemen present to-day, but I am here for the purpose of stating those views, and hearing other gentlemen, who may wish to, combat them. I did not have the pleasure of listening to the gentleman's paper. I am sorry I was not here in time to hear it. Therefore nothing that I may say can be considered personal, or as having direct reference to the paper.

Dr. Hunt, who has spoken, is a very conservative man, and one whom we tie to very thoroughly and tightly down our way, but in a great many respects he has voiced his own sentiments only, and what he believes to be, in the main, correct. In our college we took a stand some time ago, and I am free to say that it maintains the same position to-day, which is, that a preliminary examination is necessary for the admittance of a student to a dental college, and that the qualifications of the student, and not the length of the time spent at the college, should govern the faculty in granting or withholding a diploma. That, in my opinion, is the only true course to pursue. Imagine Dr. Atkinson—excuse me for mentioning your name—imagine Dr. Atkinson, an eminent practitioner of

dentistry, informed thoroughly as he is, coming to the college and going through two sessions. It seems to me the height of folly, the merest nonsense, to place such eminent gentlemen as he, and others I see before me, who may not have had the opportunity to attend a college in their earlier life, and whose full practice in later years left them no time for it, on the same level with the boys who come in without the slighest or, at least, a very imperfect knowledge of dentistry, and to require those eminent practitioners to attend a two years' course and study the same length of time as inexperienced boys before permitting them to pass the examinations. Does it not strike you as a peculiar requirement that these gentlemen, who are recognized in the profession as eminent practitioners, should be required to spend two years' time at the college? And for what purpose? Is two years' attendance sufficient without an examination? Certainly not. Then, what is it after all but the ability to pass a thorough and sufficient examination that obtains the degree at last? If you accept that you cannot get away from the position I have stated. It is only the abuse of the trust for the purpose of making money that can be reasonably objected to, and the correction of that abuse, if it exists, is in the hands of your own dental societies. You ask for a higher dental education in the colleges, and make no practical suggestions because you don't know what you want. At the first session of the Baltimore College of Dental Surgery two gentlemen were graduated, both well known practitioners, one of them subsequently a teacher in a Philadelphia dental college and a writer of ability. They were graduated after the first course. Was it necessary that those gentlemen should attend the other course in order to make them competent practitioners? I think not and so thought the faculty. Then, gentlemen, when it comes down to the point, you don't mean what you say in reference to time. We think two years too short a time—and a life-time to some is a great deal too short—for the attainment of a proper and sufficient dental education.

Would it not be well to appoint a board of visitors of three or more whose duty it shall be to attend the examination of the colleges; and if those gentlemen feel that the examinations do not come up to the proper standard let them so report, and that the students are not sufficiently advanced to graduate. That is one of the ways, and a proper one, to deal with the question. One of the gentlemen who spoke at the meeting at Niagara Falls expressed the opinion that two years in college was necessary for a man to become a dentist. I say that two years is not half enough for some gentlemen to become dentists; and I say that there are other gentlemen having a full knowledge of dentistry as it is now taught and practiced, and thoroughly competent, as Dr. Atkinson aptly remarked, to give joy to their patients by doing skillful and acceptable work, who are fit to graduate at any time without any attendance at college if they pass a satisfactory examination. The gentlemen of the societies have, I think, been mistaken. They have claimed a great deal, and they have done comparatively little in the right

direction. If they mean what they say they must take hold of the matter practically by appointing committees to attend the examinations at the dental colleges; and then let the colleges that will not receive them bear the odium of graduating persons who are not competent to practice dentistry.

Dr. Palmer—As Dr. Foster did not hear my paper, and as there was a part that I omitted, not caring to put it in, I will make a little explanation. I did not speak upon dental education in the colleges in any way; it was not my purpose to do that. I agree fully with Dr. Hunt in regard to what we may hope for and expect from the meeting of the representatives of the various dental college faculties throughout the United States, and from the meeting of the National Board of Examiners, soon to take place; I think we may reasonably expect great things from them in the way of a practical solution of this question. I did not propose to refer to that matter at all; but I do think that a proper education of young men should be required before they are allowed to enter our offices, and before they are permitted to take up the study of dentistry in any way. That is going down pretty near to the bottom of things, though, perhaps, not as far back as our friend Dr. Atkinson would like to go. A man who has a thorough classical education is far better prepared to follow any profession than one who has not had that advantage, other things being equal. The man who passes four years in a classical college learns other things than those that are laid down in the curriculum, things that are of great value in after life. He becomes imbued with a sort of brotherly feeling, a love for his alma mater, and a sense of personal dignity that a man who spends only a one or two winters' course in a dental school can never have. That fact is illustrated by a remark made recently by a young man in whom I have taken a great deal of interest, and whom I have endeavored to keep from doing some things that he wanted to do that I thought would reflect discredit upon himself and upon the profession. Three or four years ago he laughed at my suggestion that he ought to obtain a dental degree, and said it did not amount to a row of pins; but something operated to change his mind, and he concluded to obtain a degree. He entered one of the dental colleges, attended the lectures, passed a creditable examination, and obtained his degree last winter; but a few weeks ago when I was talking to him he lamented the fact that he had spent his money for a degree, saying it had not helped him any in his business, and that he did not care a —— for the dignity of the profession; what he was after was money. Now, I claim that a young man who has acquired a thorough classical education will have some interest in his profession, whatever it is, and some sense of personal and professional dignity that will check this desire to rake in the stamps regardless of whom he hurts, and regardless of everything pertaining to his profession except the money it may bring him. I tried to reason with this young man and to present the subject to him in that light, but it had no effect upon him. I agree with Dr. Hunt in regard to what we may expect from

the deliberations of the two bodies he spoke of, and that the matter may wisely be left in their hands.

Dr. Stockton—The question how to start young men properly for dental work is a great problem. A great many of them start as boys in our offices and grow up in the profession in that way; and perhaps that is one reason why the standard of education among them has been lower than it should be. I remember a remark very wisely made by Dr. Buckingham, I think it was, that the colleges did very well with the material that were sent them. I think that is true, and if you should attend the opening session of a dental college and see many of the young men who go there you would judge from their appearance that it was a pretty hard task to make much out of them in the way of dentistry. I have been very much interested in this subject for a few years past, and I know that this society has done very much to educate and elevate the profession. During the past year this society has taken a step in advance, and we are all proud that New Jersey stands to-day among the first in respect to dental laws. In regard to the subject broached by Dr. Hunt, I am very glad to hear the remarks he has made. Coming from the Baltimore College as he does, and having been connected with it so long as he has, I am very glad to hear him say that, in his judgment, at least two years time should be required for study in a dental college. It should be remembered that it is *not* the function of a college to recognize merit whenever it meets with it. A college diploma is not a mere merit mark; it does not even demonstrate that its holder is a reputable practitioner; it is simply the evidence that he has pursued a prescribed course of study; has gone through a duly enjoined curriculum. The idea that college authorities are the arbiters of the professional standing and actual requirements of all men, and that it is their province to set their seal on those who have and those who have not gone through their specific course of study, seems to me very absurd. I trust those bodies that are soon to meet at New York and Saratoga will, with their wise minds, elaborate and establish such custom and law that there will be, in the future, no conflict of authority and no conflict of opinion in this matter, but that every college and every institution of learning and every society in the land will combine to work for the fruition of the sentiment expressed in the closing paragraph of Dr. Palmer's paper—higher dental education for all.

Dr. Hayhurst—While listening to the gentlemen who have spoken there came into my mind a little text that sounds something like this: "And the spirit of God moved upon the face of the waters, and God said let there be light, and there was light." Now, while this discussion is going on in the good old-fashioned style that we have heard ever since I was as high as the back of a chair, with no perceptible change whatever, and while the colleges go on in the same course that they have pursued from the beginning, giving nearly the same set of lectures year after year, and graduating the same kind of students, who hold the same class of opinions, a new dispensation has come. I believe that out of the move-

ment that was inaugurated at Niagara last summer, and the new impulse there given to this question, there will come a really higher dental education. We may talk here as long and as much as we please, but in order to raise the standard of education in our profession very materially there must be some other method of procedure adopted; some other way of getting it than the old-fashioned way. It was said when the report of the National Board of Dental Examiners came into the Convention of the American Dental Association there that the National Board of Examiners would be the means of producing great and beneficial results in the profession, and I believe it will be so. I believe that this consultation, that I nnderstand is to be held in New York, of the faculties of the various dental colleges, is only to perfect this scheme and help carry it out. When dental examiners get together and have a full and free discussion of this matter I should not be at all surprised if there was devised by that body a new and a better system of dental education; and when advantage shall be taken of that and of the light that is spreading over the world of medical and dental science, we will meet with a success that we have never yet known. I believe that the old-fashioned kind of lecture will be done away with; that the standard of requirements will be the same in all the colleges throughout the land; and that there will be no ground or disposition on the part of one college to find fault with another in regard to the granting of diplomas. It may be that there will be such a happy time as that, and when that millenium comes there will be none of this cry of "higher dental education."

Dr. Carl Heitzmann—Mr. President and Gentleman, before I say anything upon the subject before you, allow me to thank you sincerely for the honor you conferred upon me by electing me an honorary member of your society. If it be in order I shall to-morrow give you a short account of the discoveries I have made, and that have been made in my laboratory by, I think, a highly advanced gentlemen of your profession. To-night I have to say very little. I may confirm what Dr. Atkinson has said about the study of the minute anatomy and histology of the teeth. I am myself thoroughly convinced that it is impossible for any man to work upon the teeth intelligently and with the best results except upon the basis of a thorough knowledge of their anatomy. The researches made during the last six or seven years have thrown so much light upon the nature of the structures entering into the formation of the teeth that we may express the hope that in a certain time we shall be enabled to control the action and reaction of dental work in the most scientific way by taking into consideration the nature of these structures in different individuals. It is the aim of the dentist to know what he does up to the last point, and that can be done, I am sure, only upon the sound and solid foundation which the histology of the teeth gives. To-day we know that there is not a single tissue entering into the formation of the teeth that is not alive. We know that live tissues react upon any injury done to them, and also upon foreign substances introduced into them for

beneficial purposes, such as to prevent further decay; and I am very sure that if the facts and details of the anatomy of the teeth are not taken into consideration in every single case a great deal of harm, instead of benefit, will be done by filling teeth with different materials. We are aware that the sequel to a great many operations upon the teeth is not a very pleasant one; we know that pains arise and inflammations set up where the dentist expected to do good, and where that occurs I feel confident that the work has not been done in a strictly scientific way. It has often been said that the business of a physician is a rather whimsical one, and the most brilliant-minded men are poor physicians. They try to cure by means of reasoning, but nature is so wonderfully variable and changeable that she scorns all the efforts of a reasoning physician. There is a great deal of truth in this assertion. The physician has to deal with diseases in the internal organs which are wholly concealed, and in many instances can find no satisfaction whatever in his work. Just the reverse is the case with the dentist. He can see what he is doing, and, therefore, can do accurate mechanical work; but in order to control even such a small subject as a tooth, I do not doubt that knowledge of the minute anatomy and histology of the teeth is absolutely necessary.

I am really happy to see here in this room a number of gentlemen who have studied in my laboratory in previous years; and if the new doctrine keeps on growing as it has in the last few years I am sure that, in spite of some enmity against it, American dentistry will be known and valued all over the broad world, not only for its practical excellence but for its scientific basis.

PRESIDENT BUNTING—The Committee to draft resolutions upon the death of Dr. Slocum will consist of Dr. Adams, Dr. Pinney and Dr. Merritt.

On motion of Mr. Stockton the Convention adjourned until 10 o'clock Thursday morning.

SECOND DAY'S SESSION.

THURSDAY MORNING, July 17, 1884.

The Secretary called the roll.

DR. LEVY—The special order of business for this morning is the election of officers. I move you, sir, that we proceed to the election of officers. Motion carried.

DR. G. CARLETON BROWN—I would like to have it understood that only those members who have paid their dues are entitled to vote. If members who have not paid their dues pay them now they can vote without being challenged.

DR. LEVY—I nominate Dr. J. W. Scarborough for President.

DR. STOCKTON—I nominate Dr. S. C. G. Watkins.

DR. LEVY—I move that the nominations be closed, and that we proceed to ballot. Motion carried.

Dr. Clarke and Dr. Eaton are appointed tellers.

Dr. Scarborough received 31 votes and Dr. Watkins 14. Dr.

Scarborough was delared elected President of the Society for the ensuing year. On motion of DR. G. CARLETON BROWN the vote was made unanimous.

DR. BARLOW — I nominate for Vice-President Dr. W. Price Richards.

DR. WATKINS—I nominate Dr. Oscar Adelberg.

DR. MEEKER—I move that the nominations be closed. Motion carried.

Dr. Richards received 31 votes and Dr. Adelberg 16. Dr. Richards was declared Vice-President elect. A motion to make the election unanimous was carried.

Dr. Charles A. Meeker was nominated for Secretary. On motion the nominations were closed. On motion of DR. LEVY the President cast the ballot and Dr. Meeker was declared elected Secretary.

DR. STOCKTON—I nominate Dr. Geo. C. Brown for Treasurer and move that the Secretary cast the ballot.

The motion was carried, the ballot was cast, and Dr. Brown was declared elected Treasurer.

DR. G. CARLETON BROWN—I nominate the old Board of Examiners as a whole. It has become rather an honorary office, and the old Board having served faithfully and done a great deal of work, I think they deserve the compliment of a re-election.

DR. WATKINS—I think we should nominate them individually.

Drs. Meloney, Hayhurst, Stockton, Palmer, Luckey, Levy and Barlow were nominated.

Dr. Stockton declined the nomination. Dr. Meloney requested that Dr. Stockton's name be left on the list of nominations.

The vote was announced as follows: Hayhurst 43, Meloney 41, Palmer 41, Barlow 32, Levy 29, Stockton 16, Luckey 14. Drs. Hayhurst, Meloney, Palmer, Barlow and Levy were declared elected, they having received the highest number of votes.

The following nominations were made for the Executive Committee: Drs. G. E. Adams, C. A. Timmie, G. M. Merritt, A. J. Wright, A. R. Eaton and G. Carleton Brown.

DR. MERRITT—I would like to withdraw my name. I was on this Committee last year, and do not care to serve again.

DR. LEVY nominated Dr. Pinney.

The ballots having been counted, the Secretary announced the vote as follows: Timmie 38, Eaton 37, Wright 34, Adams 17, Merritt 3, Pinney 6, Mitchell 1, Brown 37. Drs. Timmie, Eaton, Wright and Brown were declared elected.

PRESIDENT BUNTING—Our next business is the election of delegates to the American Dental Association.

DR. G. CARLETON BROWN—I move that the President appoint as delegates such members as may guarantee that they will go.

PRESIDENT BUNTING—It is requested that you elect delegates to the Association that meets in Washington.

Drs. Stockton, Meloney, Hayhurst and Watkins were nominated for delegates to the American Dental Association.

DR. G. CARLETON BROWN—I call for the question on my motion,

that the President appoint delegates to the State Associations and the American Dental Association. Motion put and carried.

DR. STOCKTON—There has been nothing done in regard to delegates to the National Association. You have only power as regards the American Association and the State Associations under that resolution.

PRESIDENT BUNTING—Gentlemen, Dr. Heitzmann, of New York, will now read a paper.

DR. CARL HEITZMANN (speaking without notes).—Mr. President and Gentlemen, on March 2 a terrible disaster happened to me and to my family. A beloved daughter of mine, 15 years of age, died of pneumonia. Several weeks of suffering attending and following that calamity broke me down to such an extent that I was quite miserable, both bodily and mentally. Some weeks after this ordeal I went to my dentist, Dr. Bodecker, who had long been familiar with the condition of my teeth, and he said it was perfectly surprising how my teeth had softened down in that short time. I suppose every dentist knows that bodily suffering from an acute disease will soften the teeth in a comparatively short time, in the space of but a few weeks; indeed a very prominent dentist of New York, when I inquired about these matters, told me that he is able to tell by working on the teeth of a lady whether she is suffering from womb disease or not. What does that prove? First, that there is a circulation of matter, speaking in a general way, within the structures of the teeth that is very much more lively than was supposed up to our time. It next proves that such circulation of pabulum or of matter being present in the teeth, they must be alive through and through. Now is the season of raspberries and blackberries, and it very often happens that a small seed is caught in a pit of the crown of a tooth, and every one of us has experienced the unpleasant, nay painful, sensation produced when the surfaces of the teeth touch such a seed as they glide over each other, and we know that a small hair being caught between the gliding surfaces of the teeth can be recognized as such. There is a degree of sensibility in the teeth that is truly surprising. What does that prove? Where there is sensibility and sensation there is life. Therefore our teeth are composed of live tissues. These are considerations which necessarily urge us to investigate the question, Where is this life located? Which is the substance that is the bearer of life? It cannot be denied that large quantities of both organic and inorganic matter are stored up in the teeth; but there must be something else, which we may call living matter proper, and though we cannot watch and study the changes in its form directly by comparison with other tissues of the body, we must come to the conclusion that we have to deal with living matter. During the last six or seven years this question has been very actively investigated in my laboratory, and I am now giving you a brief outline of the researches made there, mainly by Dr. Bodecker.

As long as the old method was followed, of drying the teeth and

making thin slabs for microscopic examination, mounted in Canada balsam, not the least idea could be obtained as to the living matter within the teeth. This, being distributed through the more solid substances of the tooth, necessarily dried out. You could not determine where the living matter was located, and as to its presence or absence we had not the least idea indeed. It is since the method of examination has been changed that we have reached the degree of perfection which enables us to see the living matter, partly without and partly with the application of certain re-agents. This new method is to soften the teeth by extracting the lime salts with a dilute chromic acid solution, which at the same time preserves the soft tissues or living matter. Another method is to grind a fresh tooth, keeping it moist and preserving the living matter either with chromic or osmic acid. Then if we place a thin section under the microscope we may trace the living matter in it.

Examining the general structure of the teeth we find that there are four varieties of tissue, the main portion of the teeth being composed of dentine, its centre being hollowed out and occupied by a myxomatous tissue, supplied with blood-vessels and nerves, the roots being covered with a structure which we call cementum, and the crown with another structure called enamel. We perceive, by looking at the dentine with a low power, that it is traversed by canaliculi, which were thought to be carriers of lime salts until the discovery was made that they are not only hollow but contain in their centre a solid thread, the dentinal fibre. This latter, curiously enough, was first seen by a draftsman employed by the celebrated Richard Owen, who represented it by a dot in the centre of a transverse section of the dentinal canaliculi, whereas Richard Owen himself does not make any allusion to it in the text of his Odontography. It was the elder Tomes who first described these fine threads, and he at the same time expressed the opinion that they might be nervous in nature. Though not positive in this assertion, he suggests the possibility of these fibres being nerves, which may account for the very marked sensibility of the dentine. You know that these fibres in the centre of the dentinal canaliculus are not perfectly round, but angular, and are evidently surrounded by some liquid. If we use a re-agent for bringing out the living matter in the different tissues, namely, chloride of gold, we very soon come to the conclusion that this cross section of the dentinal fibrilla is by no means smooth on its circumference, but that it sends out off-shoots toward the wall of the dentinal canaliculus. Along the periphery of the latter we notice very small perforations, traceable into the basis-substance which surrounds the dentinal canaliculus, and entering into a light, delicate network therein. The basis-substance is far more dense at the periphery of the dentinal canaliculi than at some distance between the canaliculi, a fact first brought to our notice by E. Newman. We satisfy ourselves regarding the fact that the fine conical off-shoots of the dentinal fibre are directed toward the perforations in the wall of the canaliculus, and if we have been lucky in applying the chloride of gold solution—Dr. Williams was so for-

tunate—we can trace the off-shoots into the dentine and see a delicate reticulum throughout the basis-substance of the dentine. Thus we come to the conclusion that the whole basis-substance is pervaded by an extremely delicate reticulum which exhibits all the properties and characteristics of the dentinal fibres and of living matter. Dr. Bodecker proved the presence of this reticulum without directly proving its being living matter. His proof was indirect, inasmuch as we see in every inflammatory process of the dentine that it breaks down to its embryonal condition, splitting up into the medullary elements from which it grew. What we can say to-day is that the dentinal fibres running from the pulp tissue toward the enamel are formations of living matter, and that the whole basis-substance between the dentinal canaliculi is supplied with living matter too—in short is alive. The meshes of this reticulum contain a gelatinous, glue-yielding basis-substance, which is infiltrated with lime salts.

The dentine is a formation of connective tissue, and kindred with bone. In 1873 I was the first to assert that in bone tissue not only the bone corpuscles but also the basis-substance is alive. I proved the same in regard to all varieties of connective tissue, which are composed of a continuous mass of living matter, pervading the whole body and not interrupted anywhere. It was an important view, I should say, for the consideration and study of the animal body as such. Up to that time the notion had prevailed that we are composed of cells, which were thought to be individuals, and that we are built up on the plan of a chimney or a dwelling, in which a number of bricks are set upon each other and stuck together with cement in order to build up the whole organization. With me there are no such cells, no such individual constituents of the body, but there is a continuity of living matter all through. One of the proofs of this view was found in the bone, and later on also in the dentine. This view being novel, and having the tendency to upset all previous theories, was met, and is met still, with a great deal of opposition. You know that but very few men are capable of doing some thinking of their own. Most people, speaking in a general way, in any department of science, are scarcely doing more than chew the cud. What is accepted by the majority is considered as a dogma, and is adhered to with an obstinacy perfectly surprising. If a man appears who has no direct adherence to any school, and who tries to prove what he maintains in the laboratory under the microscope, comparatively few people can satisfy themselves of the correctness of his views, or the accuracy of the facts upon which his views are based. That was the case with me and my theories for a number of years; but an excellent histologist in Europe has now, without any hesitation, acknowledged their correctness—namely, Professor S. Stricker, of Vienna, formerly my teacher. Prof. Stricker said it took him six years of work before he could satisfy himself of the truth of my assertions. Last year when in Vienna Prof. Stricker showed me some specimens of living tissues, particularly the cornea or anterior membrane which covers the eye, that had been brought to a slight degree of inflammation. If you

look at such a specimen of a cornea, without further treatment, you can see the motion of the living matter all throughout the basis-substance. That is a strong proof of the correctness of my assertion that the basis-substance is alive also. The tranparent animal tissues, especially the mesentery of a freshly killed frog as shown by Prof. Spina, demonstrate the same thing. It seems, therefore, that so long as we live we are changing the shape of our bodies all the time, either by growth or by the locomotion that is going on throughout the tissues of the body. All tissues change their shape and place to a limited degree, and this view would enable us to understand the circulation of the nourishing material, its ups and downs within the teeth, in which we notice great variation in their chemical composition, as before mentioned, even in the space of a few weeks.

The next tissue which interests us is the enamel. Respecting the structure of the enamel, the notion prevailed that it was composed of prisms running longitudinally and obliquely with the axis of the tooth. It was maintained that these enamel prisms lie close against and in contact with each other, there being no interstices between them. Dr. Bodecker proved the existence of narrow interstices between the enamel prisms, and also that these interstices contained extremely minute fibres of living matter; about the same as those in the dentine, only on a very much smaller scale. The enamel fibrillæ which run between the enamel prisms are extremely delicate to be sure, but they can be seen by the application of chloride of gold, and in temporary teeth even without the use of any re-agent. The younger the teeth the better you can see the course of the enamel fibrillæ. Dr. Bodecker has also shown that these delicate enamel fibrillæ send out off-shots toward the prisms, and that the latter themselves are pervaded by a delicate reticulum, very much the same as the dentine. In all probability the enamel is traversed by living matter the same as the dentine. From the moment we become convinced that the enamel is a live tissue all the phenomena mentioned, the sensation which the seed of the raspberry or a delicate hair will produce, become explicable, we are at once in a position to understand that a tissue which is alive and traversed by living matter is endowed with properties of sensation. As we now know that the fibres that pervade the enamel and dentine are very probably in direct connection with the nerves present in the pulp, there is no difficulty in understanding the transmission of sensation from the periphery of the tooth to its centre.

The third tissue entering into the construction of a tooth is the cementum that covers the root. It is a structure similar to bone, and contains, especially in its lower portions, lacunæ filled with branching corpuscles, similar to bone-tissue and termed cement corpuscles; their off-shoots pervade the basis-substance, producing a continuous reticulum of living matter. What we know to-day to be cement corpuscles were, in previous years, considered as mere lacunæ, the hollow spaces of which send out off-shoots, the so-called canaliculi. The idea prevailed that they contained a liquid holding

lime salts in solution. Others maintained that the contents were gaseous in nature. Neither of those theories is correct. Cementum is of the same structure as bone-tissue; its lacunæ contain living matter in the shape of protoplasm, the bone corpuscles, these being the centres from which a certain territory is supplied with living matter too.

What I want to prove, and have proved, is that the three hardest and densest tissues of the teeth, the cementum, the dentine and the enamel, are live tissues, so long as the tooth is in connection with the living organism; so long, at least, as the central part, or pulp, is present, in which we know there are a great many nerves and blood-vessels. If the pulp be destroyed, we have still a live connection with the surrounding pericementum, which is composed of bundles of fibrous tissue, surrounding the root of the tooth, and containing blood-vessels and nerves. We necessarily come to the conclusion that even an apparently dead tooth, that is, a tooth deprived of its pulp, must to a certain extent be supplied with nourishing material and be alive, at least in the peripheral portions of the cementum. How far that life goes nobody can say, for it is impossible to determine under the microscope the difference between living matter that is still alive and living matter that has become dead. The fibres are preserved, and so is the reticulum, and we may infer that there is a degree of vitality left in the cementum even after the destruction of the pulp.

I now come to the only soft tissue that enters into the construction of a tooth, the pulp tissue. This was also the subject of very careful researches in my laboratory by Dr. Bodecker. It was known that it consists of a delicate myxomatous tissue, which at the points of intersection shows thickenings called nuclei, evidently the centres of nutrition, or rather centres of life. There is a reticulum in the shape of delicate fibrillæ, between which lies the basis-substance that we call myxomatous. Both the fibres and the myxomatous basis-substance are the seat of life, being pervaded by living matter. The pulp is one of the few myxomatous tissues in the human body that remain myxomatous in the adult. While in the embyro there is present a great deal of myxomatous tissue, nay, originally every variety of connective tissue is myxomatous in nature, about the time of birth we have only the umbilical cord, the placenta, the vitreous body of the eye, and the pulp tissue. The tissue of the pulp remains myxomatous during life. We know that as soon as the pulp assumes the features of fibrous connective tissue we must consider this condition as morbid. A pulp that has once been the seat of inflammation will become hyperplastic and cicatricial or fibrous. The myxomatous tissue of the pulp is pervaded by a large number of nerves. They run in bundles in the shape of medullated nerves, which, as they approach the periphery, become non-medullated and send numerous off-shoots toward the periphery of the pulp tissue, where the dentine is located. Here we find bodies in rows, having the aspect of epithelia, called odontoblasts, which are invariably present whenever the tooth is fully developed and is in a condition

of comparative rest. I lay stress upon this fact, for it seems, as shown by an article that I received a few moments ago upon the development of the enamel, that it is very difficult for some histologists to understand that a tissue once formed is not permanent, and does not retain a permanent form during life-time. What I said about the tissues changing their shape and place during life in general, holds good with respect to the single elements. We have been told that after the so-called cell has formed it could not change farther. But, on the contrary, I am convinced that such changes occur through the life-time of the person, and invariably takes place during the growth of the tissues. I am convinced that these odontoblasts are formations to be found only at comparative rest, when there is no change going on toward a new formation or growth. As soon as such growth is going on, we see the odontoblasts to longer in the shape of epithelial bodies; they are transformed into medullary or embryonal corpuscles. We can prove that changes in the pulp tissue for the transformation of one tissue into another, namely, into dentine, can take place only through the intermediate stage of embryonal tissue and embryonal corpuscles.

Gentlemen, those of you who have not looked at the specimens in my laboratory probably will not have much faith in my assertions, especially in view of the fact that they are by no means universally accepted yet. I did my best last year in Europe to bring these views to the notice of the majority of the scientists in Berlin, Vienna and Heidelberg, but it was only in Vienna that they met a hearty approval, and this was owing to the fact that in Vienna resides the most advanced histologist of Europe, Professor Stricker. Neither in Berlin nor in Heidelberg were they advanced far enough to appreciate the value of these researches. In Heidelberg I spoke before an assembly of ophthalmologists and gave an exposition of the structure of the vitreous body which fills the posterior chamber of the eye, and the crystalline lens. I laid before them the proofs that the crystalline lens as well as the vitreous body, the former being epithelial and the later myxomatous tissue, are alive. The prevailing idea there was that the vitreous body is a jelly-like mass, the same as in previous years. The idea prevailed that the umbilical cord was nothing but jelly, whereas I can demonstrate the presence of living matter through that jelly. I maintain that the vitreous body is a live tissue, and so is the crystalline lens. I assert that the lens undergoes changes, its epithelial structure, under certain conditions breaks down into medullary tissue and gives rise to new tissues, to connective tissue and even to bone. Two or three observers have agreed with me, but the great majority have not. I say that frankly because, although it is the aim of my life to show the correctness of these views, I am fully prepared to wait at least ten years yet for their acceptance. Pro. Stricker, in a criticism on the German edition of my book, expresses his opinion that in the next ten years these my views will replace the old cell-doctrine. Perhaps it will take much longer. Perhaps I shall not be living when they are accepted. But one thing I can say, which

is that so long as I live I propose to work and fight for their acceptation. When I returned from Europe last year, a friend said to me, "I traced your work through Europe; you have fought as hard as Sampson against the Philistines." I replied that the result was not fully satisfactory, perhaps because I did not work with the jaw bone of an ass, as did old Sampson.

This little diverson from my subject was merely intended to demonstrate that transformations and transitions of tissues and elements are going on throughout life-time. Here you see (drawing on black-board) the odontoblasts at the periphery of the pulp tissue. It has been asserted by Tomes that the dentinal fibrillæ arise from the odontoblasts, being their direct off-shoots. This is correct so long as the odontoblasts resemble epithelia; but as soon as there is a transformation of them into medullary or embryona corpuscles, there arises a number of delicate fibrillæ between the former odontoblasts. In many instances where the odontoblasts were fully developed, the fibrillæ were traced from their periphery, but when the odontoblasts have changed into medullary elements, we can see the fibrillæ which we call dentinal fibrillæ, run between the odontoblasts, and either directly or indirectly through the reticulum of living matter in connection with nerve fibres. It has been maintained that this transition is a direct one, but this seems not to be the case, at least with the majority of the pulps I have seen. The question is of no importance, however, because both the fibrillæ and the nerves are formations of living matter. To-day it appears that it was no mistake of Tomes to maintain that the dentinal fibrillæ are nerves, for even to-day we know no boundary line or sharp distinction between the fibres of living matter, termed dentinal fibrillæ, and those termed nerves. There is a continuity of living matter from the periphery of the enamel of a tooth through the dentine with the nerves of the pulp, and, of course, with the brain and the sensual organs.

These are facts, at least acknowledged in my laboratory, and I hope by all of you who have attended my lectures. And now the question arises, what is all that good for? to be sure, the scientist does not care much about the usefulness of any discovery he makes. He takes the facts as he finds them, and very rarely thinks of the practical value that may arise from them. Nevertheless, I dare say that the practical value of the facts laid down before you is very great indeed. I believe every one of you will understand that it makes a great deal of difference in the practice of your profession, whether one takes it for granted that a tooth is merely a piece of chalk, an accumulation of lime salts, or whether one regards it as a live tissue. Even the enamel, which was formerly considered as being something like a very refined calcareous or crystalline material, we have proved to be a live tissue. It seems to me that every dentist must recognize the importance of this discovery. In former years to remove at random a certain amount of the enamel, to trim it off in order to increase the space between the teeth and thereby facilitate access to a carious cavity, was considered as but a trifling

matter, and perfectly legitimate. To-day the cutting of the enamel must be restricted to a great extent. As soon as we know that the enamel is alive, and the best protective tissue of the teeth, we must become extremely careful in handling that tissue. We can no longer remove the enamel simply to increase the space between the teeth; we should rather remove a superfluous tooth and let nature repair the injury, than remove the enamel. Certainly we will not remove the enamel in order to gain easy access to a carious cavity unless it is absolutely necessary.

A second practical gain is the knowledge that every foreign body we introduce into the tissues of the teeth will have its future action and re-action upon them. Every filling that the dentist brings into a tooth is a foreign body, and as such necessarily excites more or less inflammation. A hundred years ago the celebrated German philosopher and poet, Goethe, made some examinations of the tusks of elephants, which were the seat of gun balls. We know that the target of the elephant hunter is the socket of the eye. That being missed the ball not infrequently enters the animal's tusk; and it was found that a gun ball lodged in an elephant's tusk, and remaining there for months or years, produces a remarkable change in the dentine. This is easily recognized by the naked eye of the manufacturer of billiard balls from these tusks. The dentine of a tusk in which a gun ball has been lodged presents a changed appearance; it has become brittle and unfit to be turned into billiard balls because it has lost its elasticity. Here is a proof that a foreign body produces quite a marked change in the dentine. A filling that you introduce into the enamel or the dentine for a beneficial purpose will work exactly on the same plan; it is a foreign body, and, therefore, will excite reaction and an inflammatory process, the result of which will be a change of the tissue. This may, I admit, be beneficial in the highest degree. Suppose the inflammation around a filling leads to changes which render the dentine more firm and solid; that I would consider an excellent result of the filling. But suppose, on the contrary, that the reaction caused by the filling should be so intense as to excite a severe inflammation around it. The whole tissue being built up of living matter, the consequence would be that the inflammation would spread toward the pulp chamber, the pain, in many cases, becoming so great as to demand the removal of the filling, even though it be at a considerable distance from the pulp chamber. Evidently, it is of importance to know how much living matter is present in any given case; in other words, how much of the material of the teeth is lime salts and how much live tissue. We know that the temporary teeth have very large canaliculi and very extensive formations of living matter, with a small proportion of lime salts, in comparison with the teeth of adults. We must, therefore, take into consideration this state of things whenever we put a filling into a temporary tooth. Although I am not a dentist, I should say, speaking from a theoretical standpoint, that I would not consider it good practice to put a gold filling in a temporary tooth, the probability being that a solid

gold filling will produce too great a re-action and inflammation will arise. In the teeth of adults you find a much greater degree of hardness and consistency, which is readily discovered when you work upon them with instruments; and the teeth of adults again differ in hardness. Therefore, from a theoretical standpoint, I should urge upon dentists to be cautious and not confine themselves to one filling material, such as gold alone, but to have on hand different materials adapted to the needs of different individuals and the requirements of different kinds of teeth.

It has been maintained that civilization and culture have a great deal to do with developing the process of caries in teeth. Such was the assertion of an excellent New York dentist, Dr. Kingsley. Now, if we say that the more culture advances the more prone are the teeth to become carious, I think we have not exhausted the question, and have not reached the bottom. We know that with advancing culture bodily strength usually decreases. We know that strong, iron constitutions are found in people who fight all their life-times against the influences of the weather and climate, people who work hard and do not over-feed themselves; whereas people who have highly cultivated their minds, and at the same time neglected to exercise their bodies as they ought to, frequently do show a noticeable decay from generation to generation. That is a point settled in the last century by J. J. Rousseau and other encyclopedists. If among highly cultured people caries of the teeth is a prevailing feature, we must come to the conclusion that the organism is lacking in lime salts, and the process of caries thereby fostered. Caries has been proved to be an inflammatory process, which is assisted by low vegeteable organisms, leptothrix and baccilli; and very probably such a morbid process is more easily and rapidly progressing in teeth poorly supplied with lime salts than those of strong and healthy people.

Lastly, the value of these new views will be apparent as soon as we study the history of the development of the teeth. According to the cell-doctrine previously held, the tissues of the body being once formed cannot change; but with such views the development of the teeth was not explicable. To-day we are able to understand that an already formed tissue may change, return to its embryonal condition and give rise to new tissues; and we must realize that the growth of tissues can take place only through an intervening stage of medullary tissue.

I have laid down these novel principles in my microscopical morphology, and there for the first time brought them before the public. Both English and German editions of the book have been issued. I thought that publication would help to make the new views more popular; but after a time I came to the conclusion that outside of the laboratory, and direct demonstration of the facts, there is little hope of spreading the new ideas. Even comparatively good histologists outside of the laboratory, who are not pains-taking enough to investigate the matter, especially in the way in which I teach it by educating the eye to see and requiring the hand to draw

everything upon paper that is seen, hardly ever will become convinced of the correctness of these views. A histologist in New York went so far as to decline the honor that America has in accepting this new doctrine. My laboratory has been a great success. I have just finished the eightieth class, and that means at least 800 attendants in a little less than ten years. I think that proves at least one thing, namely, that American histologists are ahead of those of other nations; that they can see more and be taught easier. The gentleman I referred to thinks America needs no such distinction, and does not even consider the new doctrine a progressive step.

I bring these facts before you, gentlemen, in order to frankly show you the difficulty of teaching new truths. Every one who is anxious to learn anything about a novel doctrine must have a teacher in the first place. I had my teacher, and I am the teacher of others who will, in their turn, be the teachers of others still. It is, therefore, with the view of asking those of you who are interested in these things, and desire to learn how to demonstrate them, to come to my laboratory. Quite a number of the gentlemen here present have been there, and I dare say that none of them have left it dissatisfied. I did not bring a microscope here, nor anything in the way of demonstrating these facts, for I know it is futile to attempt to do it at once. The eye must first be educated to a certain extent, and when you are prepared to see you can see what there is to be seen. One of the most important things in connection with dentistry is the use of the microscope. I believe that as the knowledge of these new views broadens the mind, and more attention is given to the study of microscopy, you shall look upon the teeth in an entirely different light from what you did before.

On motion of Dr. Stockton a vote of thanks to Dr. Heitzmann for his excellent address was passed.

AFTERNOON SESSION.

The Secretary called the roll.

The application for membership of Edward H. Browne, of Rocky Hill, endorsed by Drs. Palmer and Meeker, was received and referred to the Board of Examiners.

Dr. Hayhurst—I have been requested to read the following resolution:

Resolved, That while we deeply regret the loss to our profession of Dr. M. C. Slocum, yet we bow with humble submission to the All-Wise Being. We will remember his virtues and acknowledge his many services to the profession.

Resolved, That we sympathize with his bereaved family; and we

would request that a copy of these resolutions, suitably engrossed, be sent to them as a mark of respect.

Signed,

G. E. ADAMS,
W. PINNEY,
G. M. MERRITT,
Committee.

On motion of DR. HAYHURST the foregoing resolutions were adopted.

DR. C. S. STOCKTON—Mr. President and Gentlemen, it is but a very few years since we all had the pleasure, or displeasure, of receiving visits from the agents of the Vulcanite Company. We also remember that but a short time ago comparatively we received intelligence that the Treasurer of this Company had been shot by one of our fellow-members in some difficulty that occurred in San Francisco, California. That dentist has, since that time and for that act, been convicted and imprisoned; and in regard to that imprisonment I wish to offer the following resolution, in the preparation of which I have been materially assisted by my friend Dr. Hunt:

The State Dental Society of New Jersey, assembled in annual meeting July 17, 1884, respectfully memorialize the Governor and civil authorities of the State of California to the following effect: That Dr. James Chalfant, a dentist residing and practicing his profession in the city of San Francisco, California, was, in the year —— indicted and tried for the murder of Josiah Bacon, and that on the verdict of the jury in the case he was sentenced to imprisonment for ten years; that your memorialists, while not denying the fairness of this trial nor the correctness of this verdict, believe that there were extenuating circumstances attending the commission of the act which, though not furnishing a justification in a court of law, give good and sufficient ground for the exercise of the pardoning power, and this especially in view of the fact that the dignity and supremacy of the law has been vindicated by the conviction of the said Dr. James Chalfant and his imprisonment for — years of his sentence. Your memorialists therefore respectfully invoke the clemency of the Governor and civil authorities of the State of California and pray that Dr. James Chalfant may be pardoned, and released from the remainder of his term of imprisonment.

I offer this resolution and move its adoption; adding also that the Secretary be authorized to transmit, under the seal of the Society to the proper authorities in California a copy of this resolution, and to send a copy to any societies that are likely to meet soon, and to furnish a copy to the delegates who have been elected to represent us at the meeting of the National Association, with a request to those delegates to endeavor to have a similar resolution passed there. All of us who knew old Mr. Bacon know that he was very cool and deliberate, and can imagine that our brother dentist was placed in a

very trying position. It was, undoubtedly, in a moment of passion, and when provoked beyond endurance, that he did what he, no doubt, regrets as much as anybody else; and while we feel that the law was broken, we also feel that it has been vindicated in the conviction and imprisonment of the offender, and that he should now be released. Resolution adopted.

DR. R. FINLEY HUNT—I would extend to the members of the New Jersey State Dental Society a cordial invitation to attend the meeting of the National Dental Association, which occurs on the 22d of this month at Washington. This Association was formed in November, 1880, and it has had three meetings since. Although not growing very rapidly, nor prospering very well, it is holding its own and is not at all sick or likely to die. It is formed for the whole country, and we will be very glad to see and welcome any members of the profession, particularly the members of the New Jersey State Dental Society, who have extended so many courtesies to us on this occasion.

DR. C. S. W. BALDWIN read a paper entitled

PULPLESS TEETH.

By being taught to "observe, compare, reflect and record," much has been learned upon the subject of pulpless teeth, and yet we have no infallible rule, but by our failures we learn wisdom. So in what I shall say concerning what are so commonly called "dead teeth" I may not bring forward any new theory or discovery, but in contrasting present methods with those thought to be great discoveries in the past we may see that we are progressing in the direct line towards success, not by great strides, but by constant improvement, as one would climb the mountains step by step.

The question is asked, is a pulpless tooth a dead tooth? If so, why? If not, why not? A tooth in which the pulp has recently died is not a dead tooth, because the fibrillæ, which are the off-shoots from and of the same substance as the nerve, are the medium for distributing nutrition through the dentine and cementum. These fibres are connected through all these tissues, and have been discovered running even through the pericementum into the bone tissue of the jaw.

The greater portion of these fibrillæ remain after the death of the pulp, while the portion immediately connected with the pulp becomes diseased and sloughs off farther away from the dead pulp, or the nearer we get to the pericementum these fibrillæ are in health. The deceased fibrillæ continues to approach the pericementum as the decay progresses. The disease I have described is from within; outward with the usual healthy pericementum, and it is only where the disease has so far progressed as to destroy these fibrillæ that the tooth is past hopes of successful treatment.

Having shown that the disease follows the line of the fibrillæ and canaliculi, which are enlarged from the pulp cavity—I care not if their enlargement be from acid corrosion or bacteria crowding—we can see the necessity of perfectly seating each one of the canaliculi as well as the apical foramen. We can also see that many of the prescribed methods will not accomplish this. Certainly the driving in of a wooden peg or the insertion of a gold wire, which must break down the delicate calcareous rods, thus producing farther disorder, cannot, neither will the plugging with gold or cotton, seal these openings, and I believe that the different preparations of zinc as commonly used do not the best fill the requirements.

Seeing the delicate nature and arrangement of the internal pulpless tooth, to perfectly fill this cavity we must find a substance that is indestructible; that will easily adapt itself to minute depressions with slight pressure; that will hermetically seal all these dental tubuli; that will not act as an irritant to these nerve fibres. A chloroform solution of gutta percha seems more nearly to arrive at these requirements than anything known at present, yet this alone will not accomplish all. In no dental operation will the antiseptic treatment, so much discussed at present, show as definite results as in these pulpless teeth. Heretofore creosote, which has been the standard remedy for almost every dental ill, has been tried and found wanting. Aromatic sulphuric acid, applied with a hypodermic syringe, was used with great energy, and I have seen teeth when this treatment had been persisted in until you could almost see through them, so much had been dissolved out by the application of this and stronger acids. I remember a case that I treated six weeks, using the acid with a hypodermic syringe twice a week. After I had filled the pulp cavity with phosphate of zinc, and the crown with gold, I was rewarded by having my patient say that tooth was as useful and serviceable as any she had. At present milder remedies are found to accomplish more, and with them I have been able to fill five pulpless teeth for one person, three at one sitting; the other two, as a matter of comparison, were treated sometime before filling. The three whose cavities were excavated and filled at the one sitting were equally successful with those which were treated a week or more. However, I would only fill at once when the tooth is not abscessed. After the opening of the pulp chamber has been enlarged with a burr and its extremities with a broach, absolute alcohol will dissolve out the remains of the dead nerve and fibrillæ. Then, if the tooth is not abscessed, iodoform paste should be introduced to the end of the root and the gutta percha pumped in to fill the cavity. A hard cone of gutta percha pushed in at the last will ensure a perfect adaptation to all of the intricacies. But in case the tooth is an abscessed one it should be cleaned as above and the iodoform paste inserted to the end of the root, the extreme opening of the cavity loosely filled with cotton to prevent the entrance of any foreign substance, allowing a few days of grace, when, if the work of opening the cavity has been thoroughly done, it will be in condi-

tion to fill. Most pulpless teeth, especially where the pulp has been dead for some time, have more or less lesion of the gums. I have found in such cases that iodo-chloride of zinc and chinoline, recommended by Dr. Bodecker in Riggs disease, to aid materially in bringing all parts to a healthy condition.

In a series of articles which appeared in one of the dental periodicals not long since, the writers, one of whom was an M. D., depreciated the work of filling pulpless teeth, taking the ground that they were a great source of irritation and neuralgia; that the work was so delicate and difficult that not one oral surgeon in a thousand could do this work with uniform success. To this I cannot accede. On the contrary, it is the unfilled or the improperly filled pulpless teeth that are the source of irritation and neuralgia, and I believe dental surgeons can do this work with as uniform success as that of capping exposed pulps. While a different, yet no greater degree of skill is required in manipulation, I contend that these teeth are not foreign substances which nature is trying to throw off as long as they have an antagonist and the fibrous connection between the pericementum and cement is intact. I do not eulogize this work of saving a class of teeth which heretofore have been sacrificed by the thousand in order to find a ready excuse for destroying exposed pulps, for the majority that I have treated were pulpless when they came to my notice.

I believe a vast number of teeth that now are extracted can be saved, and that we ought to teach our patients so. The old practice of killing pulps has led to the belief among the laity that a tooth which aches must have a nerve, and if it only killed the pain will at once cease. I am plain to say that one of the things which tries my patience is to have a person come in and say, "Doctor, my tooth aches me; won't you put something in to kill the nerve?" On examination I find the pulp as dead as a door nail.

If we can save these teeth—make them useful as well as ornamental—we shall have the satisfaction of hearing our patients tell us their teeth are all right, when before they were all wrong; we shall have the satisfaction of knowing they are much better than any artificial frame they can or cannot take out of the mouth; we shall have the satisfaction of receiving a more adequate renumeration for our labor.

Dr. William E. Mitchell read a paper upon

DEVITALIZED TEETH—THEIR PRESERVATION.

Mr. President and Gentlemen—The subject I have chosen for consideration to-day is one that is full of interest, and while I may not advance any new theory or present to you any novel method of treatment, I hope and trust that the disscussion that will follow will evolve much for our instruction.

There are, I may say, few of our patients who have not in their

mouths one or more teeth in which there exists a devitalized pulp, that in many cases are to all appearances good and useful organs of mastication, or, if not, can be made so by restoration, provided that when so restored the tooth will cause no subsequent trouble or annoyance to the patient. Receiving as it does the greater portion of its nourishment directly from the pulp, a tooth is, to a certain extent, a foreign material when its pulp is deprived of its life, and as such it must be placed in such a condition that it will be readily tolerated by the tissues to be retained in the alveolus. Teeth with deviltalized pulps may for convenience of study, be divided into three classes:

First—Those in which the pulps have recently been devitalized. Second—Those in which the pulps have been dead for some time, and in which decomposition has taken place. Third—Those teeth that are abscessed.

With the first variety the pulps and organic matter in the dentine being devoid of vitality and, hence, bound to decompose, all of that pulp that can be removed must be taken away for the well-being and health of the surrounding tissue, or rendered harmless by antiseptics. The canals must then be opened and cleansed as thoroughly as possible, disinfected with carbolic acid or iodoform in solution, preferably the latter; after this the canals may be sealed up and the cavity filled.

Those of the second class, in the canals of which decomposition has taken place, and is in a more er less advanced stage, I first remove all the pulp I can with a few fibres of cotton wound on a barbless broach; I then syringe the cavity with luke-warm water in which a little common salt has been dissolved, dry with more cotton on a broach; I then, with the broach, pump the iodoform solution into the canal, afterwards saturating a piece of silk floss, pass it up the canal and quickly seal up with gutta percha and wax and dismiss my patient. If, after a week or ten days, it has caused no annoyance, I remove the temporary stopping and insert my permanent root-filling, which I prepare as follows: I take oxide of zinc and mix it with about one-eighth of its bulk of the iodoform powder in a mortar, and when my canal is ready to fill I mix this with chloride and a few fibres of silk floss, and with a Donaldson broach pack up the canal as compactly as I can; after this has set I proceed to fill the cavity. In those teeth, the fangs of which are abscessed, I first clean the pulp-chamber and canal of all matter contained, make the canal as accessible as possible, then with my syringe, on the point of which I have a short piece of regulating tubing (the smallest size), making it fit the canal perfectly, I force the chloride of zinc (diluted one-half) through the canal into the abscess, and if there is an opening on the gum I force it through; I then rinse the cavity out with warm water and salt, dry carefully, and, as before stated, pump the iodoform and ether up the canal till it appears at the opening on the gum, then saturating a piece of floss with the iodoform, pass it into the canal, and seal up as before with gutta percha and wax. I keep up this treatment about once a

week until the fistulous opening on the gum heals, when I fill the canal and cavity and feel reasonably sure of success.

Before closing I would state that I have but little faith of saving such abscessed teeth where the abscess has an external opening on the face. I prefer to extract, get the abscess healed as soon as possible, than to prolong the treatment with any doubts of affecting a cure.

Dr. S. C. G. Watkins—The paper by Dr. Mitchell is a very good one, although I do not agree with him in one point, and that is where an abcess has an external opening; he says in the paper that in such cases it would be best to extract. In regard to treatment with iodoform I do agree with him, he has struck the right remedy; but I think he makes a mistake in filling with oxy-chloride instead of gutta percha.

Dr. J. Hayhurst—I do not know that I have got the particular idea intended to be conveyed by the paper, still I was very much pleased with it. I know that we older men are passing away, and I hope the younger men as they take our places will be prepared to shoulder the burden and to work through the heat of the day. I am pleased with this effort, and I hope other young men will be encouraged to make their contributions in this line. We are on the down hill of life and nearing the close. Our work is nearly done and, good or bad, the verdict will soon be pronounced upon us. Those who come after us will have the benefit of the experience we have gained, and they may take the advantage of it, I would encourage all young men to take their place in these conventions when they are called upon. We have worked the machine for fourteen years, and now there ought to be among the new generation those that are prepared to, I will not say follow in our footsteps, but to take a step beyond.

Dr. Meeker—I feel much like encouraging Dr. Mitchell in his effort and thanking him for his paper. No one but the Secretary knows the time and labor it takes to fill the programme of essays, year after year. I had considerable trouble in getting papers this year; I urged Dr. Mitchell to write a paper, and I am very glad that he has given us such a good one. I hope that hereafter our younger members will come up to the scratch and not be afraid.

Dr. C. S. Stockton—I am very glad to be able to give a word of encouragement to any of the young members of our Society and to all of them, in producing papers here, and there is no reason why they should feel afraid of doing so. There is no disposition on the part of any one who is a few years advanced in professional life to criticise them unduly or say anything discourteous or unfriendly. Some are afraid of Dr. Atkinson, who is here with us now, thinking he is a little rough in his remarks sometimes, and I don't know but he is, but he will take such criticism just as kindly as he gives it if you send it back to him. I remember a case of a young gentleman whom I urged a number of times to come here and read a paper, but who always declined, saying he did not know anything to write

about. I happened to know that he was acquainted with a certain special subject, and I suggested that he should write a paper on it. He did so, and gave us an excellent paper on that subject a few years ago, one that any of us might be proud to have been the author of. Although a young man may think he has nothing new or important to state, or has not the ability to state it well, if he will but try he is pretty sure to produce something that will be interesting to somebody else. I like to see young men make the effort, and they need not feel at all afraid of us whose hair has turned a little prematurely gray.

Dr. Hayhurst—I think the matter of encouragement to young men has received enough attention. Dr. Baldwin's paper deserves a little more notice. We will not class him among the young men. I have known from his advent among us that he is a competent man and fully able to express himself clearly. The paper that he has read, as I understand it, is a little out of the common line of practice, and there may be thoughts in it that will be found useful and interesting in the treatment of pulpless teeth. I think his presentation of the subject is worthy of the attention of some of the older members of the profession, and I would be very glad to hear some remarks upon it from Dr. Atkinson.

Dr. W. H. Atkinson—Mr. President and Brethren, it is an auspicious time and I think we need not hereafter make so much account of age when we find young men coming freshly to the work so much better able to delineate the advanced knowledge of the subjects pertaining to our calling than those of us are who have been over-loaded with the false postulates and errors that we have had to carry, and against which we have had to make our weary, working way. The two papers that have been presented to-night seem to be sent from the world of light to encourage us all, and I take it to myself as one of the greatest encouragements to find young men dealing with the questions before us just as if they were every-day work with them. Each one of the papers has some points in it that I would not endorse, because I think I know better, but in the main they are so much in advance of anything that has ever been pronounced in a body of this kind where I have been present, that I have but little to say other than the highest commendation. The men who can think the thoughts that are recorded here are necessarily better acquainted with the work in hand than the great mass of so-called first-class men are acquainted with them. And what does that prove? It proves that earnestness and persistency rightly directed will at last open the way so that the light may enter into our minds and help us to a just appreciation of the subjects before us, without the effete efforts of the older methods.

In Dr. Baldwin's paper there is an excerpt of the doctrine that we have heard to-day from the highest mind in histology on the planet. Prof. Heitzmann gave us the most beautiful *exposè* of the tissues of the teeth that I have ever heard, and I have been the means of getting up a number of the classes that have been taught in his laboratory, and have been present more or less during all the

years he has been teaching in this country. I never heard him give a lecture so replete with instruction as was this, and which was at the same time so simple and plain that anybody who had ever dealt with the elements of the teeth at all could follow him easily, and could hardly help seeing as he sees. I could go on a long time in the way of commendation, but I am afraid you might think I was giving you "taffy." You know I love you, but I love the truth more, and I love the truth because it will do you good. Your best friends are those who have trod the weary way to knowledge and fought ignorance in their own understandings for more years than many of you have lived. It is not possible for any one man to have all knowledge; all men know more than any one man; so let us pool our issues and bring our best thought to these annual gatherings of this blessed Association—that has been a blessing to the community and to the State of New Jersey such as no other association has—and then we will see a real progress here, such as those of us whose hair is silvering over have never seen. They say I am talking nonsense, and flying to the skies. Where can we fly but to the skies for that love and guidance to encourage us in our weary paths in which we have been led astray by the false teachings of men who claimed a knowledge of physiology, pathology and therapeutics which they did not possess. I think that in such a condition of the rank and file of the profession it was necessary that the heavens should work upon the minds of some men to introduce this last and highest blessing, dentistry, in order that the human family might be redeemed.

There are two or three pathological points of coincidence in these papers, which show the gregariousness of knowledge and intelligence. These two minds have followed very nearly in the same channel of thought; and both have made a mistake which shows a lack of knowledge of the difference between physiological and pathological activity. No tooth that has any inflammation upon it, though it may have a dead pulp, is a dead tooth. If there is any periosititis the tooth cannot be dead; and whether the fistula opens in the mouth or outside, I would not extract the tooth. I would disinfect the passage by pumping through it any of the ordinary remedies, such as creosote and oil of cloves in equal parts, or chloride of zinc, or exilir of vitriol. Any of those agents will disinfect it sufficiently, so that you may not need any other treatment at all; nature will take care of it. And do not be afraid of disinfecting at that very sitting during the process that has been detailed in the paper. If the opening of the fistula is outside of the face I would advise another mode of treatment, which would be to lift up the lip and make an incision, so as to have the fistula in the mouth instead of through the face, in order to avoid a scar. Scar tissue is less endowed with life than primitive tissue is. It is made up of fibrous connective tissue sparsely supplied with vessels, and that fibrous connective tissue has a tendency always to contract as long as the patient lives; scars always become smaller by reason of the elasticity of this special fibre, and the contraction makes a little pit.

As to these remedies, there is not so much difference in them as is supposed. They are all made up of different equivalents of C H O or the carbo-hydrates. Each one has had its run, iodoform, perhaps, being the favorite now. It is good, and so are the per-oxide of hydrogen, elixir of vitriol and eucalyptole. These remedies have certain relations that I think I understand, but I could not say enough in a short speech to really instruct so that you could make the knowledge your own and utilize it. I hope that from what Prof. Heitzmann has said, and the coincidence of the two papers with what he has said, you will see and appreciate the necessity of your attending Heitzmann's classes. That is what I mean in plain English; I don't dodge or blink it a bit. I do not care if you have the learning of Asia, Africa and Europe before you; it will all fail to instruct you as much as a series of courses at his laboratory. I have worked hard and long, and I think I am on safe ground; but my personalty is lost when considering the value of presenting true principles to a body that I love so dearly as I do this.

With reference to the papers, I will say further that it is a mistake to suppose that we can have a reproduction of the tissues without favoring the healing process by the exclusion of all deleterious micro-organisms. Two things have to be done: You must remove the obnoxious elements and prevent their entrance by providing a sealed chamber, that shall exclude the air, in which nature can do her work, and that shall answer to the uteris in which the original production was effected. The study of embryology enables you to understand the process of healing and reproduction. The impregnation and segmentation of the egg furnishes a group of indifferent corpuscles constituting the epiblast and hypoblast; and between these two appears the mesoblast; and it is in dispute whether the latter is proliferated entirely from one or partly from both. Out of the epiblast we get nerve plates, bone plates and muscle plates, which are only distinguishable by their location in embryo, and all reproductions follow the same order of procedure from the indifferent corpuscles to the completed tissue.

The whole secret of the process of nourishment is simply to give nature an opportunity to do her work. We do not pretend that we can do anything more than operate upon the powers of the organs to accomplish their purposes; and the way to do that will not be found in any work on pathology or physiology that I know of. Pathologists do not know the difference between a stimulant and a tonic, and do not know the difference between an irritant and that which produces inflammation. They do not know that there must be an irritant to awaken the activity that we call normal nourishment. A stimulant is equivalent to a whip that awakens a power that is already there. A tonic is the importation of energy to the elements of the tissues. An irritant may be a nutrient irritant, and it may be one that reverses that action and induces inflammation. When that irritation is below the standard of equivalency of the bonds of affinity in the elements of the tissues, diseased action is produced. That shows that it is not stenic. There

is no such thing as stenic disease or stenic inflammation. It is necessarily astentic.

If I do not define these things to your satisfaction, say so like men and ask questions. The men who only know what is told them in the books are mere pigmies as compared with those men who stand disenthralled from any dogmas of worn-out speculations. If a man is a man and really in earnest, he knows the limitation of human apprehension, he knows with what difficulty knowledge is acquired, he understands the process through which his mind went, and he gives his thought so that the simplest may understand it. If you don't know what to do, hold still and and ask counsel.

Dr. S. C. G. Watkins—Before the papers and the subject of pulpless teeth are passed I would like to describe a case which I have lately had in hand. It is the case of a lady, forty-five years of age, who had the right lower bicuspids filled thirteen years ago, the pulp canals not being cleaned out nor filled, although, as she states, the nerves were dead at that time. The teeth gave her considerable trouble at different times. At the time I saw them they were quite dark in color, the cementum was dark, and I inferred that there was very little life in them. They were giving her trouble at the time she came to me. I removed the filling from one of them, cleaned out the canal, treated it thoroughly with iodoform, and then filled the canal with gutta percha and the cavity with oxyphosphate. The lady returned in a few days and said the trouble had not been relieved. I then diagnosed the case to be one of necrosis. After burning the gum with carbolic acid I made an opening to the bone, and found both the labial and lingual plates of the alveolus much necrossed. I removed with burs and chisels all the necrosed bone, which extended from the anterior part of the first bicuspid to the posterior part of the second bicuspid, the only live bone around the teeth being a thin plate between the first bicuspid and the cuspid, and between the second bicuspid and the first molar. After removing the dead bone I filled the pocket with aromatic sulphuric acid and allowed it to remain a few minutes so as to dissolve any necrosed bone that might be left, then placed in the pocket some powdered iodoform and floss silk, and dismissed the patient with instructions to return in three days. At the end of that time when I examined the cavity I found in the bottom of it a whiteish substance which did not look like pus, but had the appearance of a clear, white albuminous substance. I syringed out the cavity with per-oxide of hydrogen, which is a test for pus, and discovered a very little pus. After thoroughly washing out the cavity I again injected aromatic sulphuric acid, then re-filled it with iodoform and floss silk. At the end of three days I repeated the application of per-oxide of hydrogen, finding no pus, but the cavity had become a little fuller with this white, albuminous substance. I inserted silk floss and iodoform as before. That treatment was repeated every three days for three or four weeks. Each time more of the albuminous substance was found, the cavity being so full of it the last time that I could not make the silk floss stay in, and I simply

placed it on as well as I could, telling the patient to come in in the course of three or four days again. She did not come. I saw her about a month after that, and asked her about the gum. She said she had not felt it for two weeks. I found the gum had healed nicely, and there was not a particle of soreness around the teeth. They had the appearance of being entirely dead, but there may be a little life around one of them. Bone has evidently formed perfectly around them, and they are now firm and solid.

Dr. R. W. SANGER read a paper on the

THE BROMIDES IN DENTISTRY.

MR. PRESIDENT AND GENTLEMEN—The subject which I have chosen for my paper is not exclusively dental, and my excuse for offering it must be that, since it is a large part of the dentists' mission to relieve human suffering, everything which aids in any way that end, or comes in as an adjuvant in accomplishing that purpose, should be welcome to the dentist, and be found among his varied resources.

The peculiar effects of the bromides, as seen in medical practice, suggest several therapeutic uses in dentistry, and on these, and the results of their use in my own practice, I base my claim to bring them before you. Though the effects of the bromides are, doubtless, well-known to you all, it will serve my purpose and make my subject clearer to briefly review their action and bring out a few of of the salient points. While they differ slightly in their action and effects, I take the bromide of potassium as fairly representative of the group and the one most commonly used.

The monor points of solubility, taste, etc., I will pass over, simply remarking that in consequence of its ready solubility in water it is easily administered, while the taste is simply saline and not highly disagreeable to anyone. It is more of its physiological effect that I wish to speak. And just here I will remark that we gain no aid in studying the effect of this medicine from its administration to the lower animals, as the results of a medicinal dose are very misleading, being to them a poison, while to man it is much milder, not a single case of acute poisoning having ever occurred. It is true that in large doses, long continued, certain effects are produced which might be classed as poisonous, but with these we have nothing to do, as my object is to show the use which can made of a single dose. The immediate effects, physiologically considered are, First—Depression of the heart's action. Second—Diminished respiration. Third—Lowering of the temperature of the body.

Bartholow's observations are that "two drams of bromide of potassium will lower the temperature in a healthy adult from one-fifth to one-half a degree, the respiration from two to five, and the pulse from ten to twenty beats per minute. The sensibility to pain, but especially the sensibility to tactile impressions, is lowered

by the bromides at all accessible points of the mucous membrane and the skin. The diminution of the sensibility of mucous membrane is due in part to a local action of the salt as it is being eliminated. They also possess the power to destroy or impair the irritability of the motor and sensory nerves and the contractibility of muscle." Now I can state categorically the therapeutic uses which may be made of bromide of potassium in dentistry, and we can all see and understand the *modus operandi*: First—We can use bromide of potassium to quiet cerebral excitement. Second—We can use it to diminish reflex irritability. Third—We can use it to diminish the sensibility to tactile impressions on the mouth. Fourth—We can administer it freely without any fear of unpleasant results.

Our brethren in the medical profession are demonstrating the value of the bromides in these respects every day, and that not in the serious maladies alone, but in the more trivial, yet none the less disagreeable—just such as we meet every day in our own practice. The physician is called in to see a patient suffering from severe mental excitement, caused, perhaps, by nothing more than a "scene" in the family. Here is no disease, but that condition of cerebral excitement and reflex irritability vulgarly called "hysterics." Our clear-headed physician perceives the condition, administers a full dose of bromide of potassium and soon the peculiar effects are seen. The brake is applied to undue excitement and irritability, and a condition of peace and quiet follows.

The novice in public speaking, having the ordeal of an address or lecture before him, knows by certain preliminary signs and perhaps by past experience, that when he shall stand before his audience his flexors and extensors, abductors and adductors, constrictors and sphinxtors, accilerators and depressors, will all so work together under the pressure of high mental excitement that the follicles of the mouth and pharynx will close, and leave the tongue cleaving to the roof of the mouth, the throat suggestive of a very dry spell of weather, the heart beating an alarm, a "globus hystericus" in the throat (the lump which can be swallowed but not kept down), the air passages so occluded, in consequence of the nervous excitement that one hundred breaths a minute seem a necessity, the hands and feet unable to find a resting place, and more than all the very opening sentence of a carefully prepared and well memorized address completly gone from memory. Now, thus forewarned he goes to a physiciam, and states the case. The one who is not familiar with the virtue of the bromides may laugh and joke, but the one who does know orders say thirty grains of the bromide of potassium to be taken one-half hour before the time of need. And with this brake on nervous excitement, the speaker comes up to the ordeal smiling, fresh and cool as a veteran.

The laryngoscopist finds a patient who, the moment a mirror is placed in his throat so far forgets himself as to try and swallow it. The examination of the larynx cannot be made. That is to be done? The trouble is simply reflex. The patient has the best intentions but is helpless. Scolding is of no use. The physician simply

orders a gargle of potassium bromide, to be used frequently, and directs the patient to come again the next day, then there is no trouble. The brake has been applied, the patient cannot be made to swallow the mirror, and the examination is completed with perfect ease.

And now I come to the practical part of my subject, to which these remarks have been leading. Certainly the results which the physician obtains from bromide of potassium in his practice in these trivial matters, as some may be inclined to call them, are highly suggestive to us as dentists, and may be applied by us in somewhat similiar cases in our own practice, cases which, if not serious, are very trying to both patient and operator. I refer to all that class of troubles we meet, characterized by cerebral excitement, heightened reflex, irritability or marked by hyper-sensitiveness to tactile impressions.

It is scarcely necessary for me to say that a perfect fitting denture cannot be made without a perfect impression, and yet how often we try to obtain a satisfactory result with one we know to be imperfect, because it seems impossible to get a better, since each attempt produces a paroxysm of coughing and choking on the part of the patient which compels us to withdraw the cup sooner than we wish. If this condition were due to foreign matter in the pharynx or larynx actually impeding respiration, we should have no remedy, but since it is so often produced when that condition does not exist, it can be classed only in the same category of reflex disturbances that the laryngoscopist meets, and this being the case, thirty grains of bromide of potassium given immediately on the arrival of the patient, will, one-half hour later obviate this difficulty, and render the patient as docile in our hands as in the hands of our medical friend.

Again, a patient presents herself desiring to have gas administered, but so nervous she can scarcely sit still while you are making the examination, and ofttimes with a doleful tale of how she almost "cleaned out" another dentist's office when he attempted to administer the anæsthetic, and he was compelled to perform the operation while the patient was only partially unconscious, thereby causing more mental suffering than if the gas had been dispensed with. Now the trouble is increased by the memory of that occasion. But it can all be remedied, and the way made clear by the administration of from thirty to forty-five grains of bromide of potassium.

Again, how frequently we have patients who tells us that they dread the after effects of a sitting far more than the actual pain of the operation, as they invariably suffer from nervous prostration and head-ache for hours. Administer thirty grains of bromide of potassium about one-half hour before you begin, and the patient will leave your chair after a sitting of an hour or more, surprised to find themselves as well as when the operation commenced.

Then we can take a hint from the fact that bromide of potassium will lessen the sensibility to tactile impressions, and give a dose freely when we have a very sensitive tooth to deal with. The result

I have found to be perfectly in accordance with what we should expect.

And here, Mr. President and Gentlemen, I close my paper, thanking you all for you kind attention.

PRESIDENT BUNTING—Dr. Sanger, I thank you for your effort, which is certainly worthy of commendation. I hope you will give us another paper at some other time. Gentlemen, this excellent paper ia before you for discussion.

DR. C. S. STOCKTON—I am very much pleased indeed, with the paper, and the spirit in which it is written. As my friend Dr. Luckey has remarked, it is a little out of the ordinary style of papers we have had, and it struck me as a very pleasant diversion from the beaten track. But I must say that I do not believe in the use of bromide of potassium; and I say that in order to caution you against the injudicious use of the drug, after having commended the paper that advocates it. A few years ago I suffered very much from what I I have called sick headache, caused I suppose by nervous exhaustion, and I remember that on one of those occasions I took a dose of bromide of potassium, probably as much as would lie on a ten-cent piece, having been nearly a whole day without eating. Well, after taking that bromide was the only time in my life when I thought I was going to die. I thought the day had come when I was going to pass over the water. I was alone in the house, excepting an old servant who had been with me for many years. A very severe pain followed the taking of the bromide, and I laid down on the lounge in the parlor. The old servant saw I was suffering severely, and she put her hand upon my brow and said "Doctor, you are dying." That seemed to confirm the thing and I thought I was gone sure. But in about half an hour the pain began to ease up, and finally passed away. I suppose that really the bad result was from taking the medicine upon an empty stomach; and the only point that I wish to impress upon you is that the dentist who uses that drug should be a little careful in that respect. I certainly never had such severe pain as I did then. I was very sick indeed, and it was caused by injudiciously taking bromide of potassium. I have been very careful in the administration of it since that time. I do not want to send any one so near as I went to the undiscovered country from whose bourne none return. I believe the bromide of potassium is a very excellent remedy when administered with caution and that it is used with good effect in a great many cases as recommended in the paper.

DR. J. M. CROWELL—The only difficulty in Dr. Stockton's case was that he did not take enough. Sixty grains of the bromide of potassium is considered not a heroic dose. In delirium tremens they give seventy-five grains frequently. I have seen it done in hospitals many a time. If you had been in hospital they would have given you more.

DR. STOCKTON—I am glad I was not in hospital.

DR. BEESLEY—I think the paper just read is a very excellent one. I have had considerable experience with the bromide of potassium.

In cases of alveolar abscess I have given as much as eighty grains in one night. As soon as sleep comes the pain is relieved. It is an excellent remedy in that disease, and I do not think we use too much of it. I think Dr. Stockton did not take enough. I think that if he had taken another dose it would have relieved him. It is an almost harmless remedy.

DR. STOCKTON—I would like to know if anybody wants to kill me.

DR. G. CARLETON BROWN—I would like to have the report of the Executive Committee, in regard to the place of holding the next annual meeting, made and acted upon to night.

DR. J. W. SCARBOROUGH—The committee have considered the matter of the place of meeting, and after discussing the pros and cons and the merits of different places, have decided to recommend Asbury Park as the place for holding the meeting next year. [Applause.] I was going to offer some reasons for this reccomendation, but it seems unnecessary.

On motion of DR. MEEKER the report of the executive committee was accepted.

Adjourned until to-morrow morning at 10 o'clock.

THIRD DAY'S SESSION.

FRIDAY MORNING, July 18, 1884.

The Secretary called the roll.

DR. MEEKER—The Examining Board have reported unfavorably upon the application for membership of Dr. Edward H. Browne, of Rocky Hill, New Jersey. On motion the report was accepted.

DR. HAYHURST—At a former session the Examining Board was instructed to furnish the Society with a list of the reputable colleges in this country, and in pursuance of that I have been authorized by the Board to present the following list:

The Baltimore College of Dental Surgery.
The Ohio College of Dental Surgery.
The Pennsylvania College of Dental Surgery.
The Philadelphia Dental College.
The Missouri Dental College.
The Boston Dental College.
Indiana Dental College.
Dental Department of the University of Maryland.
Dental Department of the University of Iowa.
Dental Department of Vanderbilt University.
Dental Department of the University of Tennessee.
Dental College of the University of Michigan.
University of Pennsylvania, Dental Department.
Harvard University Dental Department.
Dental Department of Kanas City Medical College.

University of California, Dental Department.
Chicago Dental Infirmary.
Dental Department of Minnesota College Hospital.

We would like to say to the profession and the world at large, that there is one college in the State of Wisconsin, known as Delevan College, which we would warn the community against, as we regard it as entirely bogus, and by its conduct has forfeited all its claims to respect, and so far as the New Jersey Dental Society is concerned it will not be recognized in any way whatever; and we will regard anyone sheltering himself behind its flimsey character as a a fraud and not worthy of professional recognition.

(Signed,)

C. W. MELONEY,
F. C. BARLOW,
JAMES G. PALMER,
J. HAYHURST,
F. A. LEVY.
Board of Examiners.

DR. TRUMAN—May I ask the Board of Examiners if they have included the Indiana College in that list.

DR. HAYHURST—We have.

DR. TRUMAN—Do they not gradute men in one winter's session?

DR. HAYHURST—I do not know.

DR. TRUMAN—That college was ruled out by the National Board of Examiners at Chicago last year. At least that is my impression; I am not sure about it.

DR. HAYHURST—I think we had better leave the list as it is for the present; it can be afterwards modified.

DR. LEVY—Mr. President, the Committee on Legislation would respectfully report that at the executive meeting in January, on motion of Dr. Meeker, seconded by Dr. Levy, it was decided to withdraw the bill then before the Legislature and submit the one that has now been passed and printed. And the Committee would say that the bill was passed through the efforts of Dr. James C. Clarke and Dr. Geo. C. Brown, to whom thanks of this Association are due.

DR. MEEKER—I move that the report be accepted and the Committee discharged. Motion carried.

DR. STOCKTON—In regard to the Delevan College, I think there are gentlemen in this State who have that degree hanging upon their walls and claiming they are regular graduates of a dental college. Such diplomas ought to be stamped by this Society as bogus and as unworthy of recognition. Any man who hangs such a thing as that upon his walls—for which he pays only twelve dollars and a half—ought to be ashamed of himself, and all reputable dentists ought to be ashamed of him, and his name should be placed upon our minutes as the biggest kind of a fraud.

DR. HAYHURST—In our report we said that college was bogus and fraudulent; and that anyone who seeks protection behind a di-

ploma of that character should not be recognized by the profession. I think that is putting it about as strong as it can be.

DR. MEEKER—Dr. Wright mentioned in some publication or meeting the Indiana Dental College. Does Dr. Hayhurst know anything concerning that?

DR. HAYHURST—I do not. Only I remember that at Niagara Falls there was some talk about it. I forget what the conclusion was. Possibly Dr. Truman can tell.

DR. TRUMAN—The objection to that college is that they graduate men after attendance upon one winter's session, or one year, which is contrary to the usual custom. On that account it has been ruled out.

DR. G. CARLETON BROWN—I would move that the report of the Examining Board be referred back for re-consideration, they to report before the close of the meeting. Motion not seconded.

DR. GEO. C. BROWN—I beg leave to submit my report as Treasurer. The accounts have been examined and audited by the Finance Committee of the Executive Committee, and they report $155.44 in the Treasury at this time. Motion to accept the report carried.

DR. HAYHURST—I would move that the President be authorized to appoint three delegates to the new college that the National Dental Association is about forming at Washington.

DR. STOCKTON—I am entirely opposed to sending delegates to any new association of this kind. There is a National Association already formed called the National Dental Association. It has been in existence some four years. They have an institution in the city of Washington, where they meet once every two years. This man who is sending these circulars around the country is a sort of Rip Van Winkle—he has been asleep for twenty years and don't know anything about the organizations that are already in existence. When you have a good wagon with four good wheels you don't want five.

DR. HAYHURST—There are always five wheels to a wagon.

DR. STOCKTON—Well, when we have a thing already in existence that fills the bill, and is under good management, it seems superfluous to build another; and there is no earthly necessity for another organization of this kind. Furthermore, they are using the names of gentlemen who never authorized them to use their names in that connection.

DR. MEEKER—I rise to a point of order. By a resolution passed two years ago the Secretary was authorized to issue delegate certificates to any member who should apply for them.

DR. STOCKTON—To any concern?

DR. MEEKER—To any Dental Association.

DR. STOCKTON—This is not a Dental Association. They have not organized yet.

DR. LEVY—They say that wonders will never cease, and I believe it is so. I only want to say that I agree with the gentleman who has just spoken with reference to this new association, and I hop

this Society will not send delegates to it. I see no necessity for forming another National Association when there is already one in existence.

DR. HAYHURST—In the name of peace and harmony I withdraw my motion. Now, I move that delegates be appointed to attend the usual associations.

DR. MEEKER—The motion is out of order. A resolution was passed two years ago at a meeting of this Society authorizing the Secretary to issue certificates to such members as desired to attend the conventions of other dental societies.

DR. G. CARLETON BROWN—I desire to move a reconsideration of the resolution that was passed at the first session with reference to the reading and publication of essays. On looking it over I have become convinced that it conflicts with the By-laws. Article VIII says, "All essays from active members must be original, or otherwise stated in the programme, and, when read, become the exclusive property of the Society." The second section of the resolution reads as follows: "*Resolved*, That members reading papers before this Society may have the privilege of printing such papers by mentioning that they were read before the New Jersey State Dental Society." As a resolution I do not think it will stand. I, therefore, call for its reconsideration. Motion to reconsider carried.

DR. CLARKE—I rise to a point of order. That resolution is in the nature of an amendment to the By-Laws, and it therefore requires to lie over one year before it can be acted upon. I refer to the amendment of Dr. Adams.

DR. BROWN—The original motion was made by Dr. Stockton, and an amendment was offered by Dr. Adams, which became the original motion.

DR. MEEKER—As I understood it, there were two separate resolutions. One was offered by Dr. Stockton and one by Dr. Adams.

DR. CLARKE—He accepted Dr. Adams' amendment, and that makes it one resolution.

DR. GEO. C. BROWN—I move that this matter be laid on the table.

The chair being in doubt, a rising vote is called for. Dr. Brown withdraws his motion to lay on the table.

PRESIDENT BUNTING—I decide Dr. Clarke's point of order well taken, and so declare.

DR. G. CARLETON BROWN—I did not read the whole motion. I wish the Secretary would read the whole thing.

The Secretary read the resolutions offered by Drs. Stockton and Adams with reference to the reading and publication of essays.

DR. MEEKER—By the decision on the point of order, that matter has been disposed of; it lies over until another year.

DR. GEO. C. BROWN—It is not offered as an amendment to the Constitution or By-Laws; it is simply a resolution.

DR. CLARKE—It seems to me that if a resolution has the effect of altering our By-Laws it is an amendment to them, whether the gentleman offers it as such or not. If the Constitution and By-Laws can be altered by resolution in that way, they might be completely

wiped out and new ones substituted at a single session and without notice.

PRESIDENT BUNTING—The whole resolution will have to lie over until next year. The matter is settled.

DR. STOCKTON—I would like to have it expressed on our minutes that we are very much pleased and gratified with the exhibition of crown work by Dr. H. A. Parr, who has been very kind to come here and show us how to do nice work.

DR. MEEKER—I move that a vote of thanks be extended to all the operators at the clinics, Dr. Parr, Dr. Howe, and Dr. Tees. Motion carried.

DR. J. M. CROWELL—Mr. President and Gentlemen, at a recent meeting of the First District Dental Society of New York, a committee, previously appointed, made a report with regard to the Richmond tooth crown patents. The report was accepted, and the committee, at their own request, was discharged. On motion of Dr. Northrop the dentists then present organized themselves into a mass meeting. Dr. W. H. Dwinelle, of New York, was elected chairman, Dr. W. A. Bronson treasurer, and Dr. J. M. Crowell secretary. The organization was made permanent, under the title of Dental Protective Union, and the officers named were made permanent officers.

It is known to some of you that at the time Dr. Richmond came to New York from California he claimed the exclusive right of setting the crowns in question. Subsequently he abandoned that claim and went around to the different dental offices and instructed dentists in inserting these crowns and also in doing bridge work, assuring them that he intended to throw it open to the profession. Dentists were committed to its practicability and usefulness, and after operating in their offices and necessarily making the acquaintance of a considerable number of their patients by performing crown operations for them, he opened an office. About that time he took out one or two patents; and subsequently Dr. Sheffield, a practitioner of New London, advanced a sum of money for the purchase of an interest in those patents. Since that time they have taken out some eleven patents for crown and bridge work. Later on, as I understand, Dr. Richmond disposed of his interest in the patents to the Sheffields. After such sale, and a dissolution of the partnership, the business was merged into two companies, which subsequently commenced suit against the Richmonds for infringement. These companies have also commenced suit against a gentleman in New Haven, from whom the committee have a letter stating that the cost of defending his suit will be about five hundred dollars, and that he will send the committee a check. The committee intend to defend these patent suits. Dr. Richmond, in his answer to the complaint against him, stated that he signed the applications for these patents without reading them, and that he did not know what was in them. Upon some evidence that was taken he was indicted for perjury; a warrant was issued for his arrest, and he left New York between two days. These suits are still going on, and a neglect on the part

of the profession to defend them and to contest the validity of these patents will entail upon them a repetition of the Goodyear patent business. One case successfully carried through by the holders of these patents ties the hands of every one of you who does crown and bridge work. They will not have to bring you to trial, and you will not have a chance to defend yourselves; they will simply cite you to produce your books to show what you have done, and thereon they take judgments. The Richmonds have made application to the committee to defend them and test the validity of these patents through their suits, but it has not been determined by the committee what is best to do. For my own part I am opposed to it. We have a short, direct and absolute road for breaking those patents. A patent that has been obtained by fraud the District Courts will declare void when that fact is shown. Those Richmond patents are all void by having been anticipated, this method of inserting teeth having been in use years before they were patented. In the *American Journal of Dental Science* for April, 1855, Dr. Dwinelle published an article describing a method which embraces essentially every point in the Richmond crown. And in Koecker's work on dentistry, by an English gentleman who lived many years in Philadelphia, this bridge work is described. In view of these facts, and some others that were presented to the committee, these patents will, we think, be easily and without any great expense set aside. Mr. Gordon, who defends the Richmonds in their suit, has had several interviews with the committee, and has made a statement of the case in its legal aspects before the First District Society of New York at one of their meetings. His first estimate of the expense of defending the case was $2,500; at the second interview he put it at $3,500. We received a letter from him the other day in which he estimated the expense at $5,000, and we expect that at the next meeting he will give us the cabalistic numbers, $7,000. This, gentlemen, is a statement of the business as near as I can recollect it.

Permit me a word with regard to another matter. Dr. Parmley Brown, who expected to be present for the purpose of presenting his mode of coloring the gums of plastic bases, has authorized me to say to the gentlemen of this Society and others, that if they will send me a celluloid or pink rubber case I will return it to them finished and colored, without any charge for the right, so that they will have the opportunity of trying it.

Dr. Ambler Tees, who attempted to exhibit his gum work furnace here yesterday, invited me to address those present, and I was under the impression, as my remarks were somewhat in the nature of a criticism upon his mode of procedure, that it was an attempt on his part to choke me off, and I so stated at the time; but I am satisfied, on reflecting upon it, that it was not so and that he had not finished his lecture. If I have left that impression on the mind of any gentleman I wish to erase it and to make amends to Dr. Tees.

Dr. S. C. G. Watkins read a paper on

THE USE OF AMALGAM.

There is an article used by the dental profession to a great extent which has received much condemnation. And yet hundreds of the practical men of our profession who have patience and skill, the time, the courage and the honor to do good and careful work with a material less dazzling than gold, look upon amalgam as a God-send to the dentist and the patient. Some have condemned it to such a degree that they have put themselves on record as the lamented Dr. Webb did, when he said before the First District Society in New York that "he had not used amalgam for six years and would not use it again as long as he lived."

This reminds me of a doggerel verse that I found in a dental journal some years since:

> "When it came to fitting the stump
> With a proxy limb, then flatly and plump
> She spoke in the spirit olden:
> She couldn't, she shouldn't, she wouldn't have wood,
> Nor a leg of cork, if she never stood,
> And she swore an oath, or something as good,
> The proxy limb should be golden."

So amalgam is discarded entirely, and by the golden enthusiast it is insisted that if a tooth is worth filling at all it is worth filling with gold, and perhaps they put upon their cards "Nothing but gold used," thereby ignoring the other materials, especially amalgam, which, by careful manipulation may prove so useful and beneficial. Many of the advocates of heavy gold disapprove the use of amalgam. They put heavy gold in all kinds of cavities and teeth, malleting with almost force enough to break down a prison door, and building up the contour over frail walls. What condition must the weak structure be in after such treatment? And again, one-third of the good tooth substance is cut away in order to get at the cavity so that gold can be malleted home, as it is claimed that all gold should be malleted, even the first piece, and they must either place the gold in the cavity without seeing just where it is put, and not be sure that the cavity is well filled around the cervical wall, or else cut away an unnecessary amount of good tooth substance. Undoubtedly amalgam is preferable in either of these cases.

Much of this radial gold furor, I firmly believe, arises from a pecuniary motive. The idea is prevalent that gold is more valuable than the other metals. Therefore fillings made of gold are more valuable than those made of other materials, and gold fillings are inserted without any regard to the anatomical or physiological condition of the teeth, for many cases exist where a large gold filling would be positively injurious, causing the death of the pulp, the discoloration of the tooth, abscess, loss of tooth, or necrosis.

Many gold fillings in molars are so wearing upon both patient and operator, and so expensive, that the patient is completely disheartened, and refrains from visiting a dentist again for several

years, the result being that there is positive loss, both to patient and operator. Amalgam would be much better in such cases. Our practice, to be successful, must be based upon a sound philosophy; that is, upon the knowledge of those principles and laws that govern the materials or agents with which we operate, and also those upon whom we operate. We fill teeth that we may arrest decay, prevent pain, assist in mastication, preserve the anatomical contour of the face, lend help to the vocal organs that they may produce certain sounds, and earns a livelihood for our families and a reputation for ourselves. If the circumstances under which we fill teeth are favorable they will greatly assist us in bringing out good results, and the opposite will do much to retard without there shall be brought such helps as will completely neutralize all opposition. The first thing to consider in the filling of teeth is the condition of the case in hand through a faithful diagnosis. To diagnosis a case for filling we should notice the condition of the structure, whether healthy or unhealthy, its location, and its importance to its possessor. When its unhealthy condition is changed to a healthy one, and all decayed matter removed, cavity shaped, walls formed, edges trimmed and polished properly, we are ready for the filling. Now the question arises, "What shall I fill with?" After a careful and conscientious examination of the surrounding circumstances, I should a few years ago have said gold, in most cases, like a good many of my friends in the profession. I received my dental education at the Boston College, and many prejudices against amalgam were inculcated into my training, and they were generally entertained at that time by the most able men of the profession, very few having the courage to acknowledg that they used it, or to defend its good qualities. I have seen several cases where amalgam has stood the wear and tear of forty years. And again, I have seen beautiful gold fillings from the hands of our most skillful operators fail under favorable circumstances.

With regard to the different kinds of amalgam there is little use in speaking. I prefer the alloys of Hood of Boston, Lawrence of Boston, and Dawson of New York. I have used these amalgams with great success in all conditions of cases in molars. In some cases I have built up the whole crown where there was but a small rim of the enamel and the roots were hollowed out like funnels. Many would have condemned them for extraction; others, passionate builders of gold crowns, would have persuaded the patient to endure the prolonged operations and pay for it in proportion. Such teeth, when properly prepared and filled with the amalgam thoroughly impacted, are good for many years of service without periostitus setting in as soon as the work is completed, which, in many cases, would be the result after such a cavity had been filled with gold. The worst thing that can be said against amalgam is its color, and that in two of the varieties which I have named is not very objectionable for the molars.

Unfortunately, we are not all born wealthy. Some cannot pay for gold fillings. Others are not willing to pay for them under all

circumstances; and again, some have not the physical strength to endure the insertion of a large gold filling in the posterior surface of a molar, or, in many cases, in the bicuspids, and sometimes a very small oral cavity will prevent. There is a class of cavities which I particularly wish to call attention to—viz., posterior approximal cavities in the molars, or where a posterior and an anterior approximal come in close contact. In such cases most amalgam fillings are failures, not because of any fault in the amalgam or any fault in the tooth structure, but on account of gross carelessness on the part of the operator. In all cases of approximal fillings, whether of gold, amalgam, oxy-phosphate or gutta percha, the rubber dam should be placed upon the teeth, the cavity properly prepared with under cuts from all sides where there is sufficient tooth substance to warrant it, and the periphery thoroughly trimmed and rounded, so there will be no frail edges, especially cervical-approximal. Then the cavity should be washed out with either an antiseptic or an embalmer. Prof. Mayer's theory is that bi-chloride of mercury or corrosive sublimate is the best antiseptic we have for such cases, as in very small quantities it will thoroughly destroy the bacteria, and pure carbolic acid, as we have known for a long time, will embalm the bacteria by coagulating the albumen in the canaliculi, thereby sealing the entire surface and preventing the lower organisms from forming under the filling, thus causing decay. For the same purpose some prefer the thin gutta percha varnish or copal-ether varnish, which answers a very good purpose if care is taken not to allow it to remain around the periphery of the cavity. In large cavities it is sometimes well to more than half or two-thirds fill with oxy-phosphate or oxy-chloride of zinc, allowing the filling to extend cone-shaped in the centre, leaving space for the amalgam to be placed upon the top of it.

The amalgam should be mixed very dry and placed in the cavity in small particles, and thoroughly packed around the walls with the same care that is necessary in gold filling. If the amalgam is so dry that it is difficult to work it, the instruments should be heated so that the amalgam will pack more thoroughly, and draw most of the mercury to the surface, when it can be wiped out. When the tooth is thoroughly filled, with suitable instruments made very thin, and curved to suit the different cases, trim away all excess of material till you come to the perfectly filled edges of the cavity, then draw back and forth over the filling bibulous paper folded three or four times, or fine linen tape. By so doing you will make smooth surfaces, and fill any imperfection which there may be, leaving the filling exactly flush with tooth substance. Some claim that they can fill such cases properly without the dam, and finish up the surface perfectly with silk floss drawn back and forth over the filling and under the edge of the gum, thus removing all excess material. This I claim to be impossible if the amalgam has been properly condensed. Many cases that have fallen under my eye are found to be filled too full, the amalgam projecting beyond the edges of the cavity and in some cases the filling extending beyond

the cervical wall an eighth of an inch, sending out ragged edges from all sides excepting the grinding surface. I have a number of such fillings in my possession, which were inserted by some of the good men in our profession, and some by those not so promising. After turning out such work, is it any wonder that amalgam is thus denounced, and all praise and glory given to gold? When I see such fillings I cannot help but feel that the dentist charged but a dollar, and then was afraid that he was giving his patient a dollar's worth. In preparing cavities for amalgam fillings in the grinding surfaces, a mistake is often made by not cutting out the small fissure decay all the way to the end in which case the decay extends, and it is not long before the tooth requires refilling. Sometimes in filling such cavities the amalgam is allowed to project beyond the cavity and overlap the enamel, and in a very short time it chips off and leaves ragged edges to catch the food.

Again, I find amalgam an excellent material to partially fill a cavity in the posterior surface of the bicuspid or molar, and then cover with gold. I place a very thin band of copper around the tooth and ligature it well with floss; it being very soft, the floss will draw it close around the neck of the tooth. If the tooth is so shaped that the copper will not give to it, you can burnish it down to the cervical edge so as to get a perfect contour. Mix the amalgam very dry, and pack so as to condense thoroughly, until the cavity is about three-quarters full, then cut away the filling until it is about one-half full and finish with gold. The first few pieces will be imbedded in the amalgam, and you can build right from that and form your contour perfectly. When the copper matrix is removed you will find very little trimming to be done, and in my opinion it will be a better filling than if it were all gold in that position. In filling children's teeth, the temporary as well as the six-year molars, I find amalgam invaluable. When a child is nervous and impatient, it is difficult to keep it quiet long enough to use any other material; again, the density of these teeth is not as great as in the teeth of older persons, therefore gold should not be used in such cases, and this much-abused amalgam is better than any other preparation for such cavities in the crowns and proximal surfaces of the molars.

The rubber dam is an invaluable agent in the insertion of amalgam fillings, though many claim that its use is not necessary; but I have noticed in my own fillings, as well as those of others, that the most durable and best were those where the dam was used. My patients often remark to me that they have never had the dam used for such fillings, and it is a rare thing to see a perfect approximal filling made of amalgam for this very reason.

Dr. Watkins adds: I have here a set of instruments for finishing approximal surfaces of fillings that I devised myself for that purpose; also some instruments for carrying the material to the cavity. There are no instruments in the market that are designed for the purpose of properly trimming approximate fillings. I have

also here a number of teeth that have been filled with amalgam, most of them by men of considerable prominence in the profession, the approximate surfaces of which will show the sad need of such instruments. The persons for whom I extracted the teeth informed me that they were filled by certain dentists of great reputation, giving the names; and I have been very much astonished to hear such names mentioned in connection with such fillings. None of them are over four years of age, some are not over one year old, so they are not failures on account of age. You will see that the approximal surfaces of the fillings project considerably over the tooth surface, and in the crown filling the fissures have not been cut out at all, showing gross carelessness.

Dr. R. Finley Hunt—I have listened with a great deal of interest to this paper, and I say without flattery but meaning what I say, that it is one of the best papers I have ever heard on this subject. I agree with the writer of it on every point except one or two. Perhaps it would be a matter of interest to the members of the Society present, if I were to give a short sketch of the history of amalgam in this country. As was said by the author of the paper, amalgam has met with great opposition; and there was never greater opposition to it in this country than during the existence of the American Society of Dental Surgeons, a body that very few here present will recollect; I hardly think our honored President remembers it. The American Society of Dental Surgeons took the same ground, or endeavoured to take the same ground, with reference to amalgam, that is taken by so many of the gentlemen of our profession to-day; that is, that it should not be used, and that gold was the only material that should be used in filling teeth. It gave rise to considerable discussion in that day, when there was not as much tolerance as exists in our day. They attempted to pass, possibly did pass, resolutions condemning every dentist who used amalgam in his practice. The result of that fight was that amalgam proved to be the stronger of the two combattants, and the American Society of Dental Surgeons went out of existence. That is not only history, but it is true history, which cannot be said of all history. I have used amalgam in my practice as long as I have been filling teeth, and I commenced before many of the gentlemen present were born, and I have found that there are certain teeth that require amalgam, because it possesses certain properties which gold does not, and which no other filling material that I know of does. In my practice my experience has been that when an old tooth came into my hands that was filled with amalgam in former days, it had turned almost black, and that the dentine and cementum of the tooth were thoroughly impregnated with some salt or some oxide of the metal which preserved perfectly the dentine and made it more tough than enamel itself. I found it difficult to cut this substance with the sharpest chisels; I would rather any time undertake to cut up enamel than to cut this impregnated dentine and cementum. I received a short time ago from Dr. Hartman, of Muscatine, Iowa, a sample of his white alloy, and I want to mention

a statement that Dr. Hartman made. He furnishes an alloy which will turn dark, and that property he considers necessary to preserve certain teeth in certain conditions. I agree with that idea precisely, that this coloring property, which is simply a formation of salt of the metals composing the alloy, is absorbed into and impregnates the surrounding tissue, and has the effect of preserving that tissue. What the salt is I do not know. At one time I spoke to my confreres in Washington and asked them to supply me with some old blackened roots containing amalgam fillings, in order that I might collect enough to place in the hands of a chemist to be analyzed, hoping thereby to determine what this preservative salt is, but I never succeeded in getting three teeth from my professional brethren.

I have spoken of the value of amalgam, and I wish to speak of its manipulation; but, as I might anticipate, my friend, Dr. Bonwill, who is going to read a paper on that subject, I will defer my remarks until that time. I will simply mention a point of difference between myself and my friend of short acquaintance, but nevertheless much esteem, with reference to the proportion of alloy, and the amalgamation of the alloy with mercury before putting it in the cavity. Dr. Watkins says it should be mixed as dry as is compatible with packing in the cavity. I differ with him on that point entirely, and I will give my reasons for it. When the alloy is amalgamated as dry as possible, and you come to pack it in the bottom of a cavity, you have a granular and not entirely plastic body, which you cannot adapt to the bottom and the walls of the cavity perfectly; there is a roughness and irregularity in that portion of the filling on account of its being packed dry. When it is made quite wet, as you say, with mercury, and the part of the filling that is put in first thoroughly amalgamated so as to be almost without perceptible particles of the alloy in it, then you will have a substance that works like putty or wax, and that will fill up all the slots and grooves made by the instruments in preparing the cavity. This can be shown by taking a small glass tube and packing the amalgam in to dry. You will see that you cannot possibly adapt the material to the smooth surface of the glass when that material is dry. But pack a similar tube with amalgam that is quite wet with mercury and every portion of the filling will be thoroughly adapted to the walls, the same as if it were putty or soft wax. There is a peculiarity of amalgam that is not well understood. You may take the amalgam that is as full of mercury as you please, so that it is almost globular, and pack it in the bottom of a glass vial or tube, and you will find that as you pack it down you will condense that portion of the filling in the bottom of the cavity and that the free mercury will rise to the surface, and as you add more amalgam and condense it your mercury still rises to the surface, and when the filling is completed it will be solid throughout, although when put in it was ever so wet and soft with excess of mercury. By taking that course you insure a perfect adaptation of the material to the walls of the cavity. As I condense the filling

in the bottom of the cavity and the free mercury rises, I make it a point to push that wet portion to the sides of the cavity, adding amalgam that is dryer and dryer as I proceed, which becomes thoroughly amalgamated with the softer portion first inserted. On every other point I believe I agree thoroughly with the author of the paper; and I particularly agree with him in the doctrine that the operation of filling teeth with amalgam demands just as much care in every respect as if the cavity were to be filled with gold, the cavity should be just as carefully and perfectly prepared as for the reception of gold; and if that be done, and if the amalgam is properly put in, then these failures that Dr. Watkins speaks of will not occur. The specimens he exhibits here show at a glance, I think, that the material is not to any extent responsible for the failures shown, but that the cause has been careless manipulation. And I want to say that in my experience, in my practice and my observation, there has been some peculiar habits, some peculiar behavements of amalgam that I have never been able to understand. I have frequently found my fillings that I had put in with the greatest care and finished flush with the cavity, when they came under my eye two or three or five years afterwards, projecting above the edge of the cavity. I pursue a different method of finishing my amalgam fillings from that which is followed by Dr. Watkins and a great many others. For dressing off the surface of the cavity I use simply a soft pine stick, cut thin, and shaped at the end at such an angle as you desire. For trimming off the surface of crown cavities it answers admirably the purpose. After the stick has become wet in the mouth from use, the end being very thin becomes soft and you can use it just as you would a brush over the surface of the cavity; you can trim off just as much of the superfluous filling as you want, according to the amount of pressure you put on it. It is like my friend Bonwill's plugger—you increase the effect by increasing the pressure. The finishing touches are somewhat like the finishing touches that a painter gives to his work of art.

Dr. Watkins—I want to endorse Dr. Hunt's remarks in regard to dark amalgams. In the samples I have shown here there are two teeth with very dark fillings that look very imperfect, and I wish to state that one of those fillings has been in forty-four years and the other forty-three years. They were put in by Dr. Ambrose Lawrence, of Lowell, Mass. With regard to mixing the filling dry, of course I do not agree with Dr. Hunt. Perhaps he did not understand exactly what I meant by mixing it dry. I mean to mix the amalgam as dry as can be, and have it work well and pack thoroughly, and without an excess of free mercury. In finishing cavities on the grinding surfaces I would suggest the use of bibulous paper on the end of an instrument, for the purpose of removing all amalgam overlaping the edge of the cavity and making perfect edges.

Dr. G. Carleton Brown—Dr. Watkins has stated that he extracted these teeth. I would like to know, as the Doctor is an advanced member of the profession, why he extracted them.

Dr. Watkins—Some were extracted because the parties were away

from home and could not give the time to have them attended to. Others were extracted for the purpose of cleaning out the mouth when there was but one or two remaining, and them of but little service, and putting in artificial sets. There were good resasons for extracting in every case.

Dr. G. Carleton Brown—I do not see how you can justify the removal of such teeth as you have presented there. In my practice I do not do it; and I shall have to be in practice more years than I have been to find such a state of things. At all events, I would like to say to the Doctor who has presented those specimens of teeth to this Association for the purpose of showing bad fillings, that in my opinion their removal shows very bad practice.

Dr. W. G. A. Bonwill—Before this subject is passed permit me to say a few words. Inasmuch as I was booked to say something upon amalgam, I do not know of a more proper time for it than now. For many years I have watched the progress of amalgam, and have practiced and experimented with it. For eight years I was very strongly prejudiced against it, prefering gold or tin, or almost anything else. This objection did not arise from anything I saw in practice, but from what I was taught by older practitioners. Being anxious to save every tooth I possibly could I began to look into amalgam and investigate the results of its use by the men who had preceded me. I found many such fillings as you will see in Dr. Watkins' collection there, and see almost every day, that had preserved teeth for years. I could not bring any objection against it as far as the physiological effect is concerned, and I finally came to see that, instead of any injury being done by amalgam, it did save teeth. I can show you some operations in my own mouth that were performed last winter by myself as an example of what may be done with my amalgam. Possibly other amalgams will work just as nicely in your hands; I do not speak against other brands of amalgam. I want an amalgam that I can crowd into a cavity with sufficient force to drive out the excess of mercury without driving the alloy out with it. There are many amalgams which, when you attempt to compress them as I do, and as is necessary in order to make a solid and perfect filling, will be crowded out of the cavity, the alloy and the mercury together. There was great pressure put upon the amalgam in placing these fillings in my own mouth. You will find there is great difference in amalgams with respect to the amount of pressure they will bear in insertion. I would ask, just here, if anyone present has had any experience whatever in regard to the galvanic action of amalgam fillings on each other? Being composed of metals so nearly alike, whether you have any reason to believe that there is sufficient dissimilarity between two such fillings to produce galvanic action. In my own mouth I produced such a galvanic action as I never dreamed was possible from two amalgam fillings in opposite jaws. This is a very important point, and when it is understood that galvanic action may be produced by two amalgam fillings so situated, it will be seen that we are bound to use some care and discrimination in regard to

the different amalgams that we introduce. We must get some one thing and stick to it, and keep a register of each patient's mouth, so as to know what kind of amalgams have been used. I shall have an opportunity to perform an operation before you at this time for the purpose of showing you some points in the manipulation of an amalgam filling which I consider important. I have never yet, in my experience in any society, met a man who has dared to fill a tooth with amalgam in public. Even my friend Dr. Flagg does not offer to do it, as daring a man as he is about those things. But I have engaged to fill a tooth with amalgam before this Society, for the purpose of showing you that there is a vast difference in the ways of doing it and, subsequently, in the fillings when they are done. One important feature is the use of bibulous paper. If you have nothing more to thank me for than teaching you the use of this in packing amalgam fillings, you will thank me for that when I am gone. I advocate the use of amalgam, and I am here to demonstrate that it makes a most admirable and reliable filling, notwithstanding the fact that it might be to my interest to decry it, because I have in the market a valuable instrument for packing gold. Dr. Watkins tells me he has adopted my suggestion of using bibulous paper, and yet he says he packs his amalgam as dry as it will work. I have to say to Dr. Watkins that he cannot successfully use bibulous paper upon amalgam so dry as to be in a granular form, nor can he make a perfect filling with it; the amalgam must be so soft that he can drive bibulous paper in with ease. He cannot use dry amalgam in that way; and I wish he would tell us how he uses bibulous paper in packing amalgam. If he uses it correctly I know his amalgam is not dry. I use an amalgam containing a large amount of gold, which must be packed very rapidly. Whether the cavity is large or small you can build up amalgam fillings and contour them without the least trouble; and they are the best when most rapidly done. There are some other amalgams that I could do the same thing with, provided they are cut thin enough. It makes a great deal of difference how they are cut. In packing amalgam in a loose state I take up the excess of mercury by the use of gold foil or tin foil; not as Dr. Flagg does, by taking hold of the amalgam and squeezing the mercury out. He makes a mistake there. Take an instrument with a bit of bibulous paper and drive it up with all the strength you can command, not hammering it in. I would not finish a filling with a pine stick. I have to take a steel instrument to finish the surface of my fillings. When the amalgam is put in compactly you cannot use a pine stick on its surface with any effect. And I want to say, that in preparing a cavity for filling with amalgam we should take the same care to remove all the dead structure from the periphery of the cavity as we do in preparing for a gold filling. Do not take into consideration what material you are going to fill with, but prepare your cavity thoroughly and carefully, and then if you fill with amalgam you will have greater success; and your success will be the greater if you will, above everything else, take a little piece of bibulous paper, or

your napkin (wet or dry), and with a burnisher rub down the free mercury from your filling. You can get every particle of free mercury out. At last take those little manipulators used for driving up crowns of teeth and put a piece of bibulous paper over the point, and put your whole force on it; by that means you will be able to drive all the mercury out. I think the use of bibulous paper in that way has, above everything else, contributed to my success with amalgam fillings.

DR. CARLETON BROWN—Do you use a rubber dam in making amalgam fillings?

DR. BONWILL—I do in some cases where I cannot keep the cavity dry without it. But I do not care if the cavity is ever so wet. If I have good amalgam I will put in a filling in a wet cavity just as tightly as you will do with a dry cavity, if you pack your amalgam in the ordinary way. The chief secret of that is the amount of pressure put upon the filling, and the use of bibulous paper.

DR. WATKINS—You consider it better to have a rubber dam on than to pack the amalgam in a wet cavity?

DR. BONWILL—It is always better to pack even amalgam into a dry cavity.

DR. R. FINLEY HUNT—This is the first time my attention has been called to the use of bibulous paper in packing amalgam, and I would be pleased to have Dr. Bonwill explain how it is used. Do you use it for the purpose of removing the excess of mercury, and does the mercury come out through the meshes of the paper, or at the side of it?

DR. BONWILL—It escapes not only through the meshes or fibres of the paper, but at the sides; for if you look while the paper is there you will see little bulbs of mercury around it which you can wipe off, and which do not go down again into the filling; the filling is left far more solid than it would be if the mercury were not removed and the edge strength and adaption to the walls are immensely better. You ask for improved crowns. Unfortunately for myself everything that I have gotten up I have improved and changed in such a way, almost as soon as it is introduced, that you don't know where to find me. That is shown in the history of the electric mallet. I have been killing my own productions. I have been invited to show you my latest improvements in tooth crowns, and tell you what I am still doing, but I shall not do that to-day, because there are a good many eyes and ears about, and I have been deceived so many times, and had my ideas appropriated by others, that I have become more cautious. I shall not explain the old crown further than to tell you why it has been in some cases a failure. There were dentists who demanded something entirely different. I have endeavored to supply that demand. I have been hampered by the neglect or failure of the manufacturers to make the crowns as I wanted them. One important improvement was not brought out until three years after I had submited it to them, and one in molars that was submitted to them in 1880 has not been produced until within six months. It cannot be expected that any-

thing will be a success unless the manufacturers will take the ideas of the inventor and faithfully represent them in the manufactured article, and do it within a reasonable time, instead of waiting until he has improved it out of practical existence, or until somebody else has appropriated the idea and brought it out.

The use of these crowns will obviate the necessity of extracting so many teeth. I aim at artistic as well as mechanical excellence. We should not throw away art. The highest art is to to conceal art. Instead of backing all our work up with gold, making the patients pay a larger price, and giving dentists trouble and annoyance in making repairs of work of which sometimes they do not understand the minutia, when I brought out this porcelain crown my idea was to give you something that would make as little work for yourselves and as little expense to the patient as possible, and which would tend toward establishing the use of such crowns. I was opposed at that time to the use of amalgam, even for putting the pin into the root of an artificial crown. I wanted to have something substantial and yet artistic, something that would not disfigure the mouth, and that would make you prefer operations that were not slovenly. I wanted also to give you something that could be repaired if broken. Take the Richmond crown: you cannot repair it when broken; you have to throw the whole thing aside and do the work over.

When I brought out this improvement it was not for the purpose of superceding my old crown, but for special cases of deep over-bite, giving the greatest strength with the least amount of material. That is done simply by making, instead of four pins, as in the Howe crown, one staple fitting accurately my combination metal pin at the base, with a notch, as you find it here, at the cutting edge of the tooth, making the pin run up into this space, thereby saving one staple. It does away with one of the loops. This loop is turned up and baked into the tooth itself. Here is where the pin goes through. This loop is wedge-shaped, and as it goes on it gets tighter still; it is firmly fixed at once, and there is no danger of it being moved. Those dentists who could not insert the old form without it coming off before the amalgam hardens, can set these. This tooth was gotten out two years ago in May, and given into the hands of the manufacturers, and it has not been placed on the market since. Another thing in regard to putting on molar crowns, which I did not think was practicable at the time I got them up. A large molar crown is one of the loveliest things after you get it on, although it is harder to do. There is nothing for which your patients will feel more thankful. They are so admirable for mastication. I put the pins in—three—in the usual way, two pins that go through the crown, and one other to unite all the roots. After you have this done and the crown fitted on, I find that the ordinary pink base-plate gutta percha is one of the loveliest things for securing the crown to roots. It not only makes the joint impervious to moisture, but far less force is necessary to press it home. Amalgam over a broad expanse or wide area, as when used for large molar

teeth, is a difficult thing to compress, unless you have the amalgam so thin as to be good for nothing; therefore I use pink gutta percha, pressing it up while warm. I have been surprised at the amount of strength that ordinary gutta percha gives in a tooth that has not a solid root, or in a lateral. Two years ago I put on one as a temporary affair, not taking trouble with it, and it is there to-day. I have watched it from time to time. I have done others in that way in order to see what gutta percha alone would do. That has led me to another improvement in crown teeth. I do not know yet what the result of it will be. So if men say these crowns will come off when they are put on with amalgam, then they can put them on with something else. I have found also that instead of using amalgam in the point of the tooth you can put in any of the cements, and it will harden in a few moments. But, gentlemen, in all my experience with this material I never had but two crowns come off. One was not my patient; the other was. I put two crowns on superior bicuspid roots on the left side, and the depth of the bite was such that the lower bicuspid teeth nearly touched the gum above, and I could use only cuspid teeth with the shortest undercuts. Having so little room I dislodged the first one I set while working upon the second one, and I did not know it. The patient came back in a few days with it off. I put on another crown, and that has remained. The other case was Dr. Starr, for whom I put on two teeth. He had a habit of always having a tooth-pick in his mouth. I set two teeth in the lower jaw, with Welch's amalgam, and he had no sooner gotten out of my office than he had his tooth-pick right in that place. He thought the failure was Bonwill's, and he went to Baltimore and had it done over; then he got it done in Philadelphia, and he has had it done four times, and it don't stay yet. This is his fault alone.

These improvements you should have had two years ago if I had had justice done me. The most distasteful part in this class of work is that the whole of the palatal surface has to be backed up with amalgam. I never use this kind of tooth except on special occasions, when I want extra strength. In these with the extended lip, and all porcelain, I use very little amalgam, because I remove but little of the root on the palatal side, and no amalgam shows. Ordinarly I "burn my bridges after me," that is to say, in putting on the ordinary Bonwill crown you conceal the amalgam. To make a clean and creditable operation no amalgam should show on the palatal side.

Dr. Watkins—Are those teeth in the market?

Dr. Bonwill—No, sir; they are not. I gave them to the manufacturers in May, 1882; but they did not get them out. They got into somebody else's hands. The history of that will be told after awhile.

I think it should be our object, in doing dental work, to make not only credit for ourselves, but credit for the profession at large and benefit to the public; it should be our aim to make something that we are not ashamed of when it is done; and that has been my

object throughout. I think an honorable and high toned dentist will always make the best operation he can for his patient. He should rather give up certain operations than to make a slouchy job of them. What he does should be first-class work.

I asked one of the agents of the manufacturing company what the trouble was about my crown; and I determined to ask the agents present here. It would please me if you would tell me all the defects that can be charged against it, in order that I may be able to correct and so improve the crown as to make it acceptable and as perfect as possible. One of the agents told me yesterday that my crown had not been the success that it ought to have been because a great many find fault with the pins. I find that 150,000 of the crowns have been sold; and I have sold how many pins do you suppose? Not as many as should have been. But the crowns were placed on the market in the first instance with platinum pins, with all the temper taken out of them, and with the pin too small. There is where the mistake was; it led to many failures no doubt. No. 3 pins should be used in all operations where it is possible; but, instead of using that number, some dentists would, just because there was a difference of five cents in the price, use the smaller and cheaper pin and run the risk of failure. That is the reason why a greater number of pins have broken than I anticipated. If my plan had been adopted in the first place, instead of putting the platinum wire on the market without consulting me, you would have had the best result attainable, and there would have been more credit to all concerned. So now I ask you, and I want you to answer the question, because I want to know what has been the relative success of the gentlemen present with my crowns, what their faults are? I think I have a right to ask that; and if anyone has any objections against them to present let us hear them now.

Dr. Wallace—I have been using the Bonwill crown for about three years, and in some cases I have put as many as seven or eight in one mouth. Some of them have been in use for over two years and I have had but two crowns to split. I believe one was a molar and the other a bicuspid. In one case the pin broke, and, I believe, only in one case. Some crowns have come off the pins, and I have had a good deal of difficulty in keeping them on the pins. I consulted Dr. Bonwill in reference to that matter, and he said they were not made in accordance with his orders. The crowns I have set within the past year I have had very little difficulty with. Some of his molar crowns are worn by my patients and are doing good service, and I have the same results with central incisors and canine teeth.

Dr. G. Carleton Brown—Dr. Bonwill has asked us for criticism of his crowns, and I will take the occasion to thank him for the pleasure he has given me and benefit I have derived in using his artificial teeth and pins. When I first used the three-cornered wire I had some breakings, but since I have been using the improved pin I have put in quite a number, and the pin has broken only in one case. Why it broke in that case I do not know. The break was up

in the root, and I drilled it out and examined it carefully to see what the fault could have been in the pin, but I could not find any flaw or any special reason why it should break. You know such things will happen sometimes with anyone; and I had such faith in the crown that I believed it was merely a happen-so, and I immediately put the crown on with another pin of exactly the same size and had no further trouble.

I think we are somewhat handicapped in the use of Dr. Bonwill's crown on account of the failure of the manufacturers to provide proper pins. My agent says he can only furnish one size of pin. He does not bring the large pins at all, so we are compelled to use the small pins in all cases, which was not contemplated by the inventor. I have used the Bonwill crown on molar roots, and I believe those molar crowns to be the most successful and satisfactory in practical use of any crowns that I have ever put on. Any gentleman who has not set Bonwill crowns on molar roots does not know what a good thing he has missed.

Dr. Adams—After the remarks that have been made by Dr. Bonwill and Dr. Brown in regard to the difficulty of obtaining these crowns and pins, I think it would be well for us to pass a resolution to the effect that we request the S. S. White Dental Manufacturing Co. to provide dentists with a good selection of Dr. Bonwill's crowns and pins. If it is in order I will offer such a resolution.

Dr. Watkins—I saw Dr. Bonwill put on one of his crowns at a clinic of the First District Dental Society in New York, about four years since. I think it was the first time he set one of these crowns in public; and at a meeting the same evening he gave us a description of his work. Since that time I have been using Bonwill crowns whenever in my practice I require that kind of a crown. I have never broken but one, and that was a bicuspid that was broken before I got it fastened. I have never had a tooth come off of the pins except one, and that was in the case of a man who was afraid to allow me to press it up firmly enough to get it to its place, and there was considerable amalgam left between the crown and the root. That I did not consider a fair test. I never had a pin break in any manner. In setting the pin I fill the root with amalgam and press the pin through it. It takes considerable pressure to get the pin into place. I then pack the amalgam around the pin, as the Doctor has taught us to do, with bibulous paper on the end of an instrument. I fill the root and the tooth with amalgam, and press it home with considerable force. I think this is where most of the failures occur; there is not sufficient amalgam put in the concaves of the crown and root and not sufficient force put upon the crown to force it home and pack the amalgam thoroughly. If done in this way you will find the amalgam is so hard that you can hardly cut it. Pack amalgam on the other side through the hole in the palatine surface—I am speaking of centrals and laterals, but it will apply to molars and bicuspids also, except that it is then the grinding surface—pack the amalgam in there so that your work is solid around the end of the pin. I have always made it a practice to put

a cork in the patient's mouth and require them to sit half an hour or more until the amalgam is entirely set before I allow them to go.

DR. RICHARDS—I have used a great many of Dr. Bonwill's crowns, and with marked success. I have had but two cases come back, and they were due one to a flaw in the pin and the other to the tooth moving after it left my office. My method has been to prepare the root in the usual way, get the tooth adjusted, press the pin up into the tooth and then pack amalgam around that. I then pack a little gutta percha over the root and tell the patient to come the next day. When she comes the next day there is the pin fastened in the tooth, and all I have to do is to put in gutta percha or oxy-phosphate of zinc and press the pin up into the root, and it is there as firm as a rock. Then I put a piece of bibulous paper around the buccal and lingual surfaces to keep the saliva out, and fill in with oxy-phosphate. I have not put in any molars.

DR. BONWILL—Try a molar, and put the pin in at the first sitting and you will surely have it right. By taking two days for it you make yourself unnecessary trouble. I think it is better to do it all at once.

DR. RICHARDS—I always wait a day, and I think in that way you can get better success. In some cases, of course, it is inconvenient for the patient to wait, and then I would complete the operation at once.

DR. MEEKER—I have used Dr. Bonwill's crowns exclusively ever since he gave a clinic before our Society at Long Branch two years ago; and I have to thank him for his suggestion regarding the use of bibulous paper in packing amalgam, for it has been one of the greatest factors in the success that has attended my operations of setting his crowns since that time. I lost a number of cases before that, but I have had but three breaks in the last two years, and those were all small lower lateral incisors. I think bibulous paper is one of the greatest blessings to our profession, both in packing amalgam fillings and in setting artificial crowns.

DR. WALLACE—With regard to amalgam fillings, after I have filled a tooth with amalgam and taken the utmost care, having the patient rinse the mouth to remove every particle of loose filling material, I have found, two or three days afterwards, particles of amalgam in the mouth. In cases of approximal cavities I would find particles of amalgam between the filled tooth and the adjoining one, so much that I would have to clear away the debris and polish the fillings again. I account for the failure of some of the fillings referred to by Dr. Watkins in that way. Another thing we should be careful about in putting in amalgam fillings is to see that the occlusion is perfect, and that there is not too much bearing on the filling; they should usually be left clear. I take just as much care in preparing my cavities for amalgam fillings, and in the manipulation all the way through, as I do when I fill with gold. It is also important to caution the patient not to bite on or use the filled teeth in any way until sufficient time has elapsed to allow the fillings to become perfectly hard. We frequently find fillings dis-

placed by the patient chewing upon them before they had become hard; while there would not seem to be much displacement, I would not find the fillings in the same condition as I left them in. Knowing that amalgam fillings are claimed to bulge, I am careful to have the surfaces properly trimmed before they leave my hands, and I often have the patient return in a day or two for the purpose of trimming and polishing the surfaces.

DR. BONWILL—I hope I may have the opportunity this afternoon of putting in a goodly sized amalgam filling, and I want you to see this operation as I perform it myself; not that I claim any particular smartness about it, but I want to illustrate my method of doing it.

AFTERNOON SESSION.

The following resolution offered by Dr. Geo. E. Adams, was passed:

Resolved, That this Society request the S. S. White Dental Manufactuing Co. to furnish the profession with a full assortment of the new crowns and pins invented by Dr. Bonwill.

A motion that the convention proceed to the installation of the officers-elect was carried.

DR. HAYHURST in presenting the President-elect, DR. J. W. SCARBOROUGH, said: Dr. Scarborough, you have been elected to the highest office in the gift of this Society; I congratulate you upon your elevation to that position, and express the hope and belief that you will preside with the dignity, propriety and impartial justice that are necessary to the best welfare of the Society. One thing I want to especially impress upon your mind, as well as upon the others present here, and that is that "the old guard may die, but never surrenders."

DR. BUNTING—Gentlemen of the New Jersey State Dental Society, I have the pleasure of introducing to you Dr. J. W. Scarborough, who has been elected to preside over your deliberations for the ensuing year. I trust that you will give him the same generous support and encouragement that you have so kindly extended to me.

PRESIDENT SCARBOROUGH—Gentlemen of the Society, I accept the trust you have confided in me, with grateful feelings and a profound sense of the obligations of the position to which you have elevated me. I shall endeavor to conduct the business of the office in such a manner as will in my judgement best promote the interests of the Society.

DR. HAYHURST—Mr. President, I have the honor of introducing to you our newly elected Vice-President, Dr. W. P. Richards.

PRESIDENT SCARBOROUGH—Dr. Richards, I am glad to meet and welcome you. Gentlemen of the Society, I have the pleasure of

introducing to you our Vice-President-elect, Dr. W. Price Richards.

DR. RICHARDS—Gentlemen, I am greatly obliged to you for the honor you have conferred upon me.

DR. MEEKER being formerly introduced said: Gentlemen and fellow-members of the Society ,it seems a somewhat old, old story to be introduced as your Secretary. For about eight years I have had to thank you for your kindness in deeming me worthy to occupy that position. I can only thank you for this renewed indication of your confidence, and say that I shall endeavor, as in the years gone by, to fill the position to your satisfaction.

DR. HAYHURST—Mr. President, I have the honor of introducing the old war-horse who has been in the harness so often and so long as the guardian of our funds. So far I believe he has been very trustworthy, and as our Treasurer for the ensuing year I am confident that he will continue so.

PRESIDENT SCARBOROUGH—Gentleman, I have the honor of presenting to you our Treasurer-elect, the old war-horse as he has been called, who has never run away with the funds as yet, and in my judgment he never will.

DR. GEO. C. BROWN—I thank you, gentlemen, for this renewed evidence of your trust in me as the custodian of your funds. I shall endeavor to keep the finances of the Society in as good and healthy a condition as possible, and I hope you will have the same confidence in me in the future that you have manifested in the past.

DR. MEEKER—I move that a vote of thanks be extended to Dr. H. A. Parr, of New York, for his courtesy in coming to this meeting of our Association and illustrating his method of attaching the Sheffield crown to roots; also a vote of thanks to Dr. W. G. A. Bonwill for giving us his interesting lecture on his tooth crown, as well as showing his method of packing amalgam; also to Dr. Ambler Tees, Dr. Howe and the other gentlemen who have contributed to the clinics and helped to make them interesting and valuable. Motion carried.

DR. HAYHURST—I move that a vote of thanks be accorded to the retiring officers for the efficient manner in which they have conducted the business of the Society during the past year. Motion carried.

DR. MEEKER—I move that we pass a vote of thanks also to Mrs. Coleman for the courtesies extended to the Society in giving us the use of this hall, and her kindness in giving us everything we have asked for to help us along and make our meeting pleasant and successful.

DR. RICHARDS—I would add, as an amendment, that a Committee be appointed to wait upon Mrs. Coleman and present this resolution of thanks.

Motion carried as amended, and Drs. Richards, Hayhurst and Reading appointed a committee under it.

DR. G. CARLETON BROWN—I wanted to say a few words in the presence of Dr. Watkins in answer to a remark he made privately bearing upon my remarks to him in public with reference to the

extracting of those teeth he presented here, but he has left. He said that if he had mentioned the names of the gentlemen who filled some of those teeth I would not have been so anxious to speak about it, implying that I was one of the "prominent practitioners" —I thank him for that promotion—who had put in some of those fillings. I wanted to say to Dr. Watkins publicly that I defy him to give the names of the gentlemen whom he says he knows put in those fillings. I am sorry he left so soon to-day.

Adjourned.

CLINICS.

Blake, Fleer & Co. exhibited a good line of dental instruments.

Dr. W. G. A. Bonwill filled a tooth with amalgam, showing his method of packing it and the use of bibulous paper in that connection.

Dr. H. A. Parr set a Sheffield crown on a left superior central root that had been crowned in the old-fashioned way with a wood pin.

The S. S. White Dental Manufacturing Co. had a fine line of their goods on exhibition, and Dr. Burke, representing them, showed the Verrier furnace for continuous gum work, also an electric mouth lamp.

The Wilmington Dental Manufacturing Co. made an excellent exhibit of their artificial teeth.

Dr. Ambler Tees, of Philadelphia, by special invitation of the Society, gave a clinic practically demonstrating continuous gum work with his "Lilliput Furnace," and fully explaining the different stages of the process of mounting. The only convenience for draft was by putting the pipe from the furnace out of the window, and, even with that imperfect substitute for a flue, a second coat of body was fused and the gum-coat so nearly fused as to show that with better draft the piece would have been one of that artistic excellence so characteristic of the Doctor's workmanship. All present were satisfied that the "Lilliput" has fully earned and richly merits its oft-applied title of "Perfect Little Gem."

Dr. W. Storer-How illustrated his method of setting an artificial crown.

PROCEEDINGS

OF THE

NEW JERSEY STATE DENTAL SOCIETY.

FIFTEENTH ANNUAL SESSION.

ASBURY PARK, July 15, 1885.

The Association met in annual convention, the President, DR. J. W. SCARBOROUGH, in the chair.

The convention was opened on Wednesday morning, with prayer by the Rev. Wm. J. Roberts, of Philadelphia.

DR. GEORGE C. BROWN—Mr. President, as we are under the head of applications for membership, I will, with your permission, bring up a matter that was discussed last year; that is, the time when the dues of members commence and end. The discussion of the matter last year originated in an application for withdrawal from this Society by Dr. Hanks, of Jersey City. He had sent in his dues for the current year, two dollars, and I had credited him with the same. The point was raised that a member when he joined the Society and paid his initiation fee of five dollars, had, in paying that five dollars paid his dues for one year in advance. I claimed at that time that the first year's dues were not included in such payment, and I still maintain the same position. We have two members now who are in the same category that Dr. Hanks was in. I refer to Dr. Merritt and Dr. Baldwin. I sent bills to both of them. One of them said that under the decision of last year he was not holden for any dues; and Dr. Baldwin said he had sent his resignation to Dr. Meeker. Article V reads: "The initiation fee shall be five dollars, including certificate of membership. The dues shall be two dollars, payable at the annual meeting." In the old Constitution the initiation fee was three dollars; it was subsequently decided to change it to five dollars, and to make the initiation fee and certificate of membership together seven dollars. In the new By-Laws that article was amended so as to make the whole thing five dollars—that is the initiation fee and the certificate of membership; but nothing was said about the dues being paid in advance. But Article II of the

same By-Laws provides that "candidates for membership may be proposed at the regular meetings, application for the same being made in writing, endorsed by two of the members of the Society, and accompanied by the initiation fee *and one year's dues.*" If that is carried out it would require a payment in advance of seven dollars, which has never been done. I have credited new members who have paid five dollars with nothing more than their initiation fee and certificate. Another point I would like to have definitely settled, and that is whether a member may in the middle of the year, in January or any other time, send his resignation to the Secretary, and by that act release himself from all obligations for dues for the current year. A resignation so tendered cannot be accepted until the next annual meeting, and when the time for that meeting arrives the member owes one year's dues, and I claim that you cannot properly act upon that resignation until the dues are paid, any more than you can allow a man to vote when he has not paid his dues. I claim that you have no right to accept a member's resignation until his dues are paid up.

PRESIDENT SCARBOROUGH—There seems to be a conflict in the laws and rules that we have made to govern us, and I would suggest a resolution be passed, to meet the difficulty.

DR. LEVY—I think the Treasurer is in error. It is distinctly provided that the initiation fee shall be five dollars, and that no application for membership shall be received unless accompanied by five dollars and the first year's dues of two dollars.

DR. HAYHURST moved that a committee be appointed to draw up and report a resolution that should harmonize the apparent conflict in the By-Laws. Dr. Levy offered an amendment that the whole matter be referred to the Executive Committee. The amendment was accepted and the matter was so referred.

The Secretary read the following proposals for membership: Dr. J. A. Bolard, of Millville, N. J.; Dr. E. L. Stevens, of Princeton, N. J., and Dr. Joseph W. Curtis, of Hackettstown; endorsed respectively by Drs. Barlow and Brown, Palmer and Wilson, Palmer and Meeker. Dr. Richards of the Executive Committee reported that the courtesy of the floor be extended to visiting dentists from outside of the State; that new business be allowed only in the first half hour of the sessions; that a reception be given on Thursday evening in the ball room of the Coleman House to the members, their families and invited guests; that the election of officers be held on Friday morning after the roll call; and stating that there is a balance in the treasury of $49.53. Report of the Executive Committee was accepted and adopted.

DR. MEEKER, of special committee to secure accommodations for this meeting reported the contract made with the Coleman House. Received and committee discharged with the thanks of the Society.

DR. E. H. BUNTING, SR.—At our meeting last year Dr. Burke, of the S, S. White Dental Manufacturing Co., seeing that we had no gavel to use during our meeting, said to me that he would see that we had one this year. In pursuance of that promise Dr. Starr, of

the same Company has handed to me for presentation to the Society this beautiful ebony gavel, handsomely engraved with a suitable inscription. I have the honor to present the same to the Society; and I would suggest that proper acknowledgment be made.

PRESIDENT SCARBOROUGH—I accept this gift with thanks of the Society. I regard it as of value especially from the fact of our Society being remembered by the greatest dental manufacturing company in this country and the most extensive house of its kind in the world. I am sure the Society fully appreciates this remembrance of us. Thanks are due to Dr. Burke, who has been instrumental in having it presented to us. The inscription is: "The New Jersey State Dental Society: from the S. S. White Dental Manufacturing Company: 1885." It is possible that this opportune moment for the presentation was selected, because they may have known that your chairman was small of stature and poor in voice, and supposed that he might need a gavel like this to keep order. If so I feel very thankful to the house personally. I am sure it would quell a turbulent member because it is heavy and substantial; and I have no doubt we will have good order throughout the session.

Dr. George M. Merritt tendered his resignation of membership.

DR. PALMER stated that he had received a letter from Professor Pierce, of Philadelphia, in which he expressed a wish to read his paper, entitled, "A Factor in Dental Caries," some time on Thursday morning, and moved that the reading of Dr. Pierce's paper be the first thing after the routine business, Thursday morning. Dr. Palmer's motion prevailed. Dr. G. Carleton Brown gave notice that there would be a clinic at 4 o'clock, Dr. Timme, Dr. Spyer and others to operate.

The Secretary moved that the first business of the session after roll call and routine business be the delivery of the President's address.

AFTERNOON SESSION.

The President in the chair.

DR. HAYHURST, of the Examining Board, reported favorably upon the candidates for membership referred to the Board at the morning session, viz.: Drs. J. A. Bolard, Joseph W. Curtis and E. L. Stevens.

A motion that the Convention proceed to ballot for the candidates named was carried. Drs. Richards and Eaton were appointed tellers.

A ballot being taken, Dr. J. A. Bolard was declared elected a member by unanimous vote.

DR. RICHARDS moved that the two remaining candidates be balloted for by the Secretary. Dr. Levy objected, and the motion was not entertained.

DR. MEEKER moved that the two remaining candidates be

balloted for together. Dr. Pinney objected. It being stated that the intention was that the ballot for each candidate should be separate, but collected at the same time, the objection was withdrawn.

A vote being taken, Drs. Joseph W. Curtis and E. L. Stevens were declared duly elected to membership.

DR. RICHARDS, of the Executive Committee, made a report, recommending that no member shall withdraw from the Society except at the annual meeting, and not until his dues are paid.

DR. GEORGE C. BROWN—The object of this amendment is to prevent a member from sending in his resignation to the Secretary at any time during the year that may suit him, and then claiming that he is not a member of the Society and is exempt from paying dues for that year. The Secretary has no power, as I understand it, to accept the resignation of a member.

PRESIDENT SCARBOROUGH read his annual address.

PRESIDENT'S ADDRESS.

Gentlemen of the New Jersey State Dental Society:

It becomes my privilege and pleasure to-day, on this our re-assembling in annual convention for the fifteenth time, to announce to you that our ranks are still full; that our members, so far as I can learn, are in the enjoyment of life and their usual state of health; and to congratulate you, with thanks, that we thus have been spared from the inroads of disease and death during the past year. We come here annually, spending our time and money, leaving home and business, and for what? For fun. Yes, partially so—for the cultivation of that friendly relationship with our professional. brethren that adds so much to the enjoyment of professional life, and for the more important purpose of aiding each other in the acquisition of knowledge by filling our places here and performing our part as co-laborers in the cause of dental education, now being carried on so vigorously outside as well as inside the college doors. The college and school house are not the only places where educational facilities are found by any means; nor does education stop with the close of the college term. I believe the dental student should consider himself a student from the time he commences his first term at college until retirement from active practice in old age.

Progress should be the watchword, aye, it seems to be the watchword in dentistry, which is and has been making rapid strides upward from a chaotic, uncertain condition towards a scientific basis during the past few years. We have progressed in the number of dental colleges, and, perhaps, in thoroughness and efficiency of their instruction, since their respective faculties have formed an association and confer together for mutual benefit. We have progressed in journalistic and book literature. We have multiplied dental societies, and, as I believe these to be important factors among the many instrumentalites in this progressive uplifting

movement, I will comment more particularly, yet briefly, upon them, especially our own State Society. Of course the student begins his dental education in the college presumably with a good general education. After graduation there he is ready to enter the private school found in his own office. Here he becomes measurably his own instructor, his patients furnishing the lessons. In this school he never graduates; it is his studio while he practices. He should now subscribe for two or three of the best dental periodicals for assistant teachers and peruse them carefully. They will be valuable aids. Prof. Taft has well said: "The persistent student never becomes a quack. No dentist who has subscribed for from two to four good dental journals and carefully read them can be a quack." Then he should become a member of a dental society and his facilities for continuing investigation and research will be tolerably complete. The well conducted dental society is ever a school of information to whoever elects to avail himself of its advantages. The influence of our State Society, with the operation of the State law it gave birth to requiring everyone commencing practice in the State hereafter to be the possessor of a diploma from a reputable dental college, must have the tendency to elevate the standard of qualification of the practitioner throughout the State. The law, I believe, is as well enforced as most State laws are. What has been done in the way of its enforcement or whether its provisions have been violated the past year, will be set forth in the Prosecutor's report, which will be submitted for your information. Our organization has become a centre of light and knowledge for its members. Here it is that the latest and best instruments and appliances—all things new and useful in our calling are exhibited by inventors and dealers; and operators demonstrate their favorite methods of operating; and unsettled two-sided questions are intelligently discussed, etc., so that if we don't go home wiser than we came the fault is not in the opportunity. Hence, I can but express the wish that all who are outside would qualify themselves to become honorable members of this or any other society that may be more convenient of access, especially our young college graduates, some of whom (fortunately, but few) seem to think they know all there is or ever will be to know about their chosen profession. Attendance here for a time might divest their minds of this bigoted notion and convince them that there may possibly be a few things more to learn now and hereafter than they are masters of to-day. This accomplished they will have learned the most important lesson of their lives and be on the sure road to future growth. Our elder brothers have long since learned this lesson—learned to know that man never becomes too old to learn and to grow in mental stature. They are here with us year after year, both as students and teachers, ready to see and profit by anything new that some inspired genius may have brought forth, as well as to shed the light of their extended experience and keen observation among us, giving us their best thought upon the topics under discussion. God bless the aged brothers.

To the end that our Society may be of the greatest possible use to its members, I suggest that a "quiz" box be kept upon the Secretary's table, for members to deposit questions in, which should be read and briefly answered, say in three minute speeches, if in the judgment of the officers time permits, at each session. I am aware that a similar suggestion was made some years ago but never acted upon. Thinking well of it, I repeat it here. An opportunity would thus be offered to have brought up and discussed any subject a member might wish more light upon. It would also furnish an opportunity for any member who might be overcharged with important information to relieve himself by asking and answering the question himself, for the benefit of the body, which would be a commendable thing to do. Should you act upon this suggestion, allow me to say that in my judgment the fitness of all questions deposited to be read at all to the convention, should be left to the President and Secretary, and Vice-President, in case the two former disagree. If no other good should come of it, it might be the means of furnishing subjects for important papers at future meetings.

I invite your attention to the well known fact that there is to be an "International Medical Congress" held in the city of Washington, D. C., in 1887, and I am informed that a section of "Oral and Dental Surgery" has been organized and the officers appointed. But a statement appears in the last number of the *Independent Practitioner*, which, if authoritative and to be relied upon, puts a new phase upon the matter. It appears that the committee engaged in the work of organizing was authorized by the Congress in session at Copenhagen in 1884, to invite the Congress to meet in Washington, D. C., in 1887, and to make arrangements for the same. The American Medical Association accepted their invitation, and yet, at their late meeting at New Orleans, virtually revoked the authority of the committee, and appointed an advisory committee. The latter held a meeting and agreed to drop the section of oral and dental surgery entirely. This seems to be a conflict of authority. What may grow out of it is difficult to foresee. But it is not improbable that there may yet be evolved out of the confusion a dental section; and if so I see no reason why the representative dentists of the United States should not have a hand in preparing the work of that section. I therefore recommend the appointment of a committee to have the matter in charge, and if the section should be organized on the representative basis here indicated, to see to it that our State is not left out in the cold, and report their findings to our next annual meeting.

In conclusion, I must express the hope that we will all use our best endeavors to keep down strife and contention, and preserve the organization in the harmonious condition and vigorous working order that I believe to be its condition to-day, that the greatest degree of good may be meted out to its members.

Dr. Levy moved that the President's address be referred to a committee of three to be appointed by the President. The motion

was adopted, and the President appointed Dr. Levy, Dr. Luckey, and Dr. Palmer.

Dr. Jos. Spyer, of Philadelphia, read a paper on

ADVANTAGES OF NARROW SURFACE COHESION DENTAL PLATES.

Gentlemen—Considerable difference of opinion has existed among physiologists as to the precise sense of taste; though the tongue seems to be the special organ of gustatory sensibility in man. We find that the papillæ in which these highly sensitive nerves of taste are located, are distributed over the *arch of the palate*, the soft palate, the fauces, as well as on the end, sides and dorsum of the tongue. Taste differs in different individuals, some having the sense largely distributed over the palate, while in others it is distributed more over the surface of the tongue. Thus we find that if sour, sweet, or bitter substances be applied to the tip or sides of the tongue, the difference between them is immediately detected, while if the same be applied to the dorsum or middle of the tongue, no impression is produced. The reverse is the case with other persons. It follows then that the sense of taste is not invariably located in precisely the same places, in different persons, and to such as have this taste more highly sensitive in the arch of the palate, a denture which covers over these delicate nerves or interposes any covering between them and the food partaken of must be of disadvantage to the wearer. There are moreover many instances in which the nerves of common sensation are so organized as to result in excessive nausea if any continued pressure be exerted near them.

There is not the least doubt that the sense of taste has for one of its objects the selection of food, or the directing us in the choice of it. When such articles of food are agreeable to us, excitation of of these nerves occurs, and by reflex action a flow of saliva is provided, thus assisting deglutition and aiding materially in the digestive process. So much is the sense of taste relied on that some physicians regard it as one of the best indications as to what is best for the patient, and give freely when such articles of food are craved. It is thought that the most exquisite gratification of the sense of taste is produced just before the act of deglutition, when the food being thoroughly insalivated is pressed by the tongue against the arch of the palate and soft palate. The advantages then of a narrow plate become apparent not merely because it does not impede the tongue from manipulating the bolus of food for the acts of mastigation, insalivation and deglutition, but also because it does not impinge upon those portions of the mouth where pressure is likely to excite nausea.

Dr. Morgan says: "I have seen but few large artificial plates which did not give trouble. It is not the natural condition of the mouth to be covered. Nature did not provide for the wearing of an artificial roof."

Dr. Kulp says: "I and my professional friends examined one thousand cases, in three-fourths of which disease was found. It is an unnatural condition of the mouth to be clogged."

We have brought forward these few instances of the disadvantages of large plates covering the entire roof of the upper jaw, whereby a diseased condition is often produced, and have shown also that it is physiologically wrong to place any intervening substance over such of the nerves of taste as may be located in the arch of the palate.

We now purpose describing a method of overcoming these disadvantages by the use of a narrow plate, which will cohere as well as will a large plate, by the aid of the central suction chamber; and also to lay before you a manner of packing vulcanite for the construction of these cases, as well as for any other forms of denture which may be preferred, whereby the necessity for flasking is avoided, and, indeed, all the disagreeable features of vulcanite work are dispensed with.

To obtain cohesion a surface plate is made use of, which is placed against the model. The mode of applying the same we will here describe: When the base is rubber the exact size is outlined on the plaster cast; the width varies according to the absorption, and measures from one-half to an inch. The firmness of this narrow plate in the mouth is attained by the inner surface of the plate being covered its entire length with a surface cohesion plate, and after the plate is finished the palatal surface will be covered with a series of rounded or approximately semi-oval projections having flat tops with a depression in centre of top of projections, as shown in drawing, that aid its cohesion without producing any irritation of the membrane and only covering the edge of the gum with a small strip turned over on the inner side. The plaster cast is dried by a suitable degree of heat, after which it is coated with thin liquid rubber; then the surface cohesion plate is placed in position on the palatal surface of the plaster cast, and sheet rubber added the same as in "waxing up a job." After this plaster mixed with potash alum is poured over the cast and it is then ready for the vulcanizer, and as many as six cases can be arranged to be vulcanized at one time.

By the foregoing described method the usual flasking is dispensed with, and the annoyance and unclean work attending the flasking are all avoided, besides saving of time and material. The surface cohesion plates can be applied to all bases used for artificial dentures made in any size or form, and being composed of chemically pure tin, it will be found of advantage as a means of counteracting the non-conductivity of the rubber.

When gold, platinum or other metal is used, adjust surface cohesion plate on palatal surface of plaster cast, mould in sand and make the metal "dies" in the usual way, and swage up the plate. In use the rounded projections will be pressed into the tissues of the gum. Around the base of these projections there is practically a continuous channel or opening, so that the moment the edge of the plate is removed from the gum the entire surface of the latter

is at the same instant relieved. By entering the tissue of the gum as described, the projections expel the air from between the soft parts, and such expulsion of the air causes the plate to hold firmly to its place, as will be understood.

The Chairman of the Clinic Committee having stated his inability to procure a patient for Dr. Spyer to illustrate his method, Dr. William H. Atkinson offered himself.

EVENING SESSION.

The President, J. W. Scarborough, in the Chair.

Roll called by the Secretary.

DR. H. A. PARR, of New York, was nominated for honorary membership, endorsed by Drs. George C. Brown and Charles A. Meeker.

DR. EATON moved that the dues of Dr. A. W. Kingsley be rescinded and that he be placed on the list of honorary members. Passed.

DR. LEVY proposed for honorary membership Dr. A. L. Northrop; sponsors Drs. F. A. Levy and G. Carleton Brown.

The nominations were referred to the Board of Examiners.

DR. W. H. ATKINSON read a paper on

PATHOLOGY OF THE TOOTH PULP.

To diagnose the point at which nutrient change becomes denutrient or physiological action becomes pathological action in the pulp of a fully developed tooth is of the greatest value to all who deal with them in health or disease.

In health a regular molecular change converts the outer portion of the pulp into evenly disposed layers of secondary dentine. Departure from regularity may be so slight as to give no sign so as to call attention to the abnormity. Departures are of two kinds viz.: First, Increased local deposit of the lime salts, and Second, Solution of lime salts and a return of the tooth structure (dentine) to the soft embryonal condition, by the simple reversal of the nutrient currents, by which the entire root and much of the crown may be removed. In the deciduous teeth this is nature's method of getting them out of the way of the coming adult set. I have seen this sort of change occur in the permanent teeth so like that occuring in the infant set as to lead to the supposition that it had a like antecedent disturbance of current.

When the increased deposit of lime is in regular layers of equable thickness, the pulp recedes, as the process of calcification goes on, so quietly as to be quite within the pale of phyiologicial action. But when the deposit is more abundant at one or more localities, the nerve tracts are liable to be impinged upon by the hardening of the lime salts in unequal masses, thus mechanically pressing upon

the nerve so as to disturb their currents; which now becomes the first perceptible deflection of current constituting the inception of pathological action. At this point the periphery of the pulp may take on a reversal of nutritional molecular change, reducing the tissues to the embryonic condition, and thus allow the regularity of calcification to complete the formation of secondary dentine, nearly filling the canal with this growth. In the effort to return to the embryonal condition, there is a liability to the formation of gas in the breaking up of the old and formation of the new molecules and their aggregations. If more gas than the amount capable of solution in the fluid portions of the tissues be formed, stasis of nutrient current is inaugurated and the gas may accumulate to such a degree as to explode, splitting even very strong and well-formed teeth.

When the solidification of lime salts occurs in the body of the pulp in one or more localities, forming what have been called "pulp stones" (which are more common than is generally supposed), we may or may not be made aware of the fact. In case no sensory nerve be interfered with we have no "sign." But in case of interruption of the continuity of neurine, we will surely be apprised of the degree of stoppage of current, and the measure of its degree by the character of the suffering of the patient. When the gas is set free in the pulp in small quantity the uneasiness is relieved by biting upon or by pulling upon the tooth involved. At a little further stage of accumulation of gas, we may secure a momentary (or may be permanent) relief by cold applications, which counteract the expansive force of the gas. But tapping the chamber is the only legitimate, prompt and complete treatment for such cases.

In many instances the pulp dies by reason of the pressure of the gas, and thus the trouble is ended with a twinge, leaving a discolored tooth as the testimony of the death of its pulp. Many such remain for life in the mouth, to do as good service as their more presentable fellows. There are so many terminations to the antegrade and retrograde nutrient movements that we need to be scientists and philosophers to comprehend and detail even a portion of them. The normal result of pulp calcification is exemplified in the lower incisors of the ruminantia, viz.: consolidation in regular succession from crown to end of root.

If we take this as the type of true physiology in teeth we will be forced to the conclusion that all human teeth come short of complete physiological production, as no one has yet recorded a human pulp so completely consolidated as to leave no tracts of soft pulp tissue along chamber and canal. Pulp stones often form in rows in the pulp, which sometimes flow into rods of beautifully beaded lengths, and other times into variously knobby masses but generally distributed singly throughout the pulp.

In these efforts of the organisms to preserve the machinery of function in sound working order we have the proof of intelligent adaptation to circumstances, viz., a compromise between internal (individual) and external (general) manifestations of building and

destroying energies. Every form of morbid growth is but the result of the effort to limit the destructive energy to the territory in which it makes its advent; and to convert the growth into increase of normal tissues, which has long been apprehended under the name of *hypertrophy*, or, failing in this, to repel the incoming flow of pabulum, thereby arresting further increase, thus inaugurating the first step in the regressive change called *atrophy*. When the effort at rectification of nutrient movements does not effect its purpose *homologous growths* are converted into *heterologous growths;* and this deficiency of ability to effect the purpose of the organism to maintain its wholeness, is the occasion of morbidity of every form—viz., (first) setting free of gas, which (second) arrests nutrient currents, producing (third) abnormal tissue elements, of which (fourth) morbid growths are constructed, the intention to give an entire enumeration of which has already been disavowed.

It was said that the effort to maintain the societary association of molecules in an organism was evidence of intelligence. This statement must be taken with the understanding that the manifestation of intelligence is limited to the internal, individual, or systemic modes of estimate of values of association of elements in tissues, organs and systems or those associations called "whole-bodies." This last word, whole-bodies, is also to be understood according to the class, order, genera, species and variety of body under contemplation.

If we examine molecules we will discover that their first choice is to maintain their already acquired multiple state, and to resist being separated into atomic-gaseous or most diffused condition. And if not obstructed in choice they take on further more complicated modes of aggregation and form corpuscles of normal type; but if obstructed, proceed to build corpuscles of less than normal confirmation rather than to separate entirely. This is what is known as habit of former association. The habit of persistence in the lower association is then the initiative of heterologous growths, which are always minor expressions of the nutrient activities. Homologous growths may be heterologous in location and thus become the first and simplest examples of obstruction of function and in this sense pathological.

The conditions which modify temperature are the necessary foresteps in functional changes. The condition popularly known as "taking cold" is of more value in a scientific sense than "scientists" have considered it. The obstructions of nutrient currents attributed to taking cold, may be induced by increase of temperature as well as lack of normal measure of heat. Heat congeals (coagulates) pabulum (juices of the flesh) as well as cold. Stoppage of current is the first step in pathology which results in death if continued.

Whatever impact of energy re-starts the current in respiration, innervation, circulation or locomotion will be the means of restoration of current, the tendency of which is always toward restoration to health when the temperature of the part is kept at normal

standard. Animals when sick either seek seclusion and quiet or run wildly about, thus instinctively favoring elimination of morbidity by diffusion or encystment. Diffusion by sweating eliminates the poison most readily. In the absence of increase of perspiration or other profluvia, fever sets in throughout the entire juices of the flesh (pabulum) of intermittent or continued character, in accordance to the degree of degeneracy of the pabulum.

Degeneracy may be inherited to start with. In such cases, physiological processes are upon a lower plain of tension of nutrient currents than the physiological standard in good constitutions. Weakness may be induced in such organisms by poor food, bad digestion and irregularity of habit, in eating, exercise and resting. Local expressions of the general debility can be in the teeth only during their growth and nutrition.

Defects in enamel and dentine may lay the pulp liable to deflections of the nutrient activities by which the health and soundness of the formed and forming tissues are maintained.

The greatest prophylactic for teeth, either when well-formed or weaker ones, is vigorous use so as to bring every tooth into exercise. Irregularity of occlusion is the main obstacle to this normal use. Where teeth have no antagonists their pulps are most liable to pathological modes of nutrition. Therefore they should be supplied with opposing artificial ones; by such methods as each variety of case will suggest to the competent practitioner.

Dr. B. F. Luckey—I rise not to discuss the paper, but to a question of information. The Doctor stated that all deposit of lime salts, and all formation of dentine after a tooth has arrived at its adult condition, is secondary dentine. The point I want to be enlightened on is the time when a tooth does arrive at its full development, formation or adult condition. How are we to determine when primitive formation ends and secondary formation commences in the pulp canal ?

Dr. Atkinson—I am too happy to find that the blessed chickens of the old blue hen are always in a conversational mood and desirous of the truth. That is a point that has disturbed naturalists and anatomists, and all for the reason that they could not determine when the physiological type of an organ was completed. Fortunately for dentists, we are standing midway, and deal with all the three modes of formative activity in building functional bodies, in the enamel which is crystal, in dentine or the cell, and in the pulp or corpuscle. When the length of the root is complete, whatever size your pulp chamber is, then it is primary dentine. And that depends so much upon ancestral endowment and family habit and molecular activities registered in the off-spring that it is a very fine point to determine. We should know enough not to make absolute lines of demarkation when there are lines of mergence. Wherever the calcifying process goes on after a tooth has attained its full length there will be more basis substance or connective tissue of the dentine in the interspaces between the tubules than there

usually was in the primary dentine; and in accordance with the rapidity or the slowness of the deposit of lime salts and the abundance of supply of lime salts do we get this demonstration when we cut the teeth. We can only make these deductions by very laborious and long-continued study. We cannot cut a tooth all over while in the mouth and have it useful to the patient, but if we can cut enough to establish the principle where and how to differentiate between primary and secondary dentine, we have attained a point from which we can reason. It is because of the irregularity of this deposit that we ever came to know anything about pulp stones. I did not put that in my paper. The source of my intelligence I have sometimes said was the angels. It is the intellectual and affectional impact of radiancy that reveals the truth to my consciousness. It is not mine until it is revealed, and then it is mine just long enough to hold until I can give it to you.

Dr. Frank Abbott—Mr. President, I did not hear all the paper. In the part that I did hear one particular point struck me as being especially truthful, and essential to the well being of every man who depends upon his teeth for the mastication of his food. My friend made the statement that the proper function of the teeth is mastication of the food, and if that function is not performed the teeth would be more or less injuriously affected, and he cited cases of imperfect articulation of the teeth, all of which we can endorse very heartily. There was one point in this connection upon which he did not touch, and that is the interference with proper function by the extraction of certain teeth in the mouths of children. It causes the remaining teeth to tip, thereby destroying their natural articulation. We see thousands of cases where the masticating surface is almost entirely ruined by such extraction. It becomes more difficult to keep them clean, and the food necessarily goes into the stomach in an imperfectly masticated condition. Not only are the teeth more liable to be destroyed when not performing their proper function, from the lodgement of food on them, etc., and we are rendered toothless much earlier than otherwise, but the digestive organs are overworked and we become dyspeptic. If you overwork any piece of machinery it is bound to yield sooner or later. Americans are the dyspeptic nation of the world, and it is largely due to the imperfect condition of their teeth. When teeth come into the mouth properly and are kept in position, each one fits perfectly upon another and the extraction of certain teeth must more or less interfere with that natural articulation. Nature fits the teeth together in a much more perfect manner than it is possible for us to do. By extracting three or four of the sixth years molars we not only destroy a portion of the teeth nature has provided for mastication, but we leave the others liable to tip from their proper position, leaving a surface that can only imperfectly masticate the food. This a very material point, which we should look at in all its bearings and consider very seriously.

Dr. C. N. Pierce—Mr. President, Dr. Atkinson's paper is as full of aphorisms as an egg is full of meat. Before I make any further

remarks I want to ask a question. As I understood him, he said the nutrient currents were disturbed by an accumulation of gas. I want to know whether he places that accumulation of gas in the pulp in advance of the disturbance of the nutrient currents as a disturbing cause, or whether he supposes there is an accumulation of gas in a healthy pulp?

DR. ATKINSON—That is another question that it is very desirable we should understand. If I said what Prof. Pierce states I made a mistake. I did not mean to make any such mistake, and I do not think it is in the paper. I said that the nutrient current being disturbed generates a gas that impinges upon the neural tract by distention. I am not so deficient in the anatomy of the teeth as to make such a mistake as that. I may make a slip, but I do not mean to do so, and if I do I thank anybody for calling my attention to it. I do not wish to lead anybody astray. It is the nutrient current that is disturbed by an impact of energy, which I do not define in the paper because it would involve such an amount of conception of various stages of learning manifested in the minds of the profession that if I were to go into it we would get but a few steps to-night. The disturbances of the nutrient current disrupts old molecules and forms new ones. If that disruption is instantaneous and at a latent point, the gas is immediately appropriated in the formation of a new molecule and does not take a free and distinct form. But if it is not taken in the nascent state in the process of tissue formation, then the gas that is set free mechanically presses against the neural tract, the interior of which is neurine, waxy and soft and easily moved, and that stops the nerve current.

DR. PIERCE—My impression was that my friend did not say what he meant. There is value in the remark that the nutrient current is disturbed, and by its disturbance we have the evolution of a gas. Not only are the systemic conditions disturbed, but the pulp is confined in an unyielding case. Any systemic disturbance may throw into the pulp an excess of blood, which may make a disturbance in the nutrient energy, and then we have this evolution of gas; and the pulp being confined in an unyielding canal inflammation ensues. I have had cases of devitalized pulp where there was no decay at all. It was simply a systemic disturbance, or a systemic condition that resulted in devitalization of the pulp. I had a case of two central incisors in which were very superficial gold fillings. The pulps took on a condition that resulted in a retrograde metamorphosis by which the dentine was absorbed and the pulp brought close against those small gold fillings by the breaking down of that hard structure. The action was exactly the reverse of what takes place when teeth are built and pulp cavities obliterated by a deposit of secondary dentine. These things are due to systemic conditions. The influence of systemic nutrition, or lack of nutrition of the nutrient currents, is too much overlooked. There is a local condition which gives us much trouble, and that is loss of function. Use or function has a great prophylactic action on the teeth. That is to be the

subject of my remarks to-morrow morning, when I will endeavor to illustrate how it is a thoroughly established law all through the animal kingdom that use is the real prophylactic agent. We want to make our patients fully realize the importance of the dental function which the teeth are so well adapted to perform.

DR. EATON—I would like to ask Dr. Atkinson if this gas forms before the pulp dies.

DR. ATKINSON—That is another point upon which instruction is needed. What does the gentleman mean by the nerve dying? A portion of the pulp dies; that is to say, there is a molecular mass that does die or else you could not have gas generated. But that does not mean death of the whole pulp. The destruction may involve only a small portion of the territory. When you have pulpitis some of the tissues die. When we say the pulp we mean the entire contents of the chamber and canal. It is like the building of a house: you cannot build up a whole house at once; you must take it in parts, brick by brick. These corpuscles of the blood answer to the bricks with which we build a house. If some of the bricks are not well burned they ought not to be put into the weather side of the wall because they will not stand; and so if the molecules or corpuscles are not properly organized they will fail. But even a poorly organized individual may by proper prophylactic treatment—that is, a proper amount of exercise and food—be in a tolerable state of health. I have a case exactly in point where a very intelligent dentist, a well educated man, was applied to for the treatment of two very tender teeth, left superior central and a lateral incisors. He supposed the pulp was dead. There was disease of the transverse plate inside the sockets between the teeth. He began to drill. When he came into the dentine he found the tooth was living. He did not understand it and he brought the patient to me. I made an examination; and I had such confidence in his ability to tell whether the dentine was living or not that I went on with the operation without removing the temporary filling he had inserted, and I found necrossed bone. I burred it out and made a perfect success. There was a case where ninety-nine in a hundred would have said the pulps were dead. That is a rare case. We may have a part of the pulp converted into pus, with a perfect little abscess there, and yet have it return to health. Many times I have drilled through to the pulp chamber and taken a drop of pus out and a cure was affected because a change was given it. All the tissues of the body are under the same law; and the moment we can know how protoplasm is converted into embryonal mass, and embryonal mass into the different corpuscles out of which these tissues are built, then we will begin to get at something like a satisfactory understanding of what nutrition and denutrition are.

DR. HAYHURST—I do not rise with any idea of criticising the paper. It has been to me a lesson of instruction. Many points in it seem to start a thought, and in that way such papers are especially useful. One of the most valuable faculties is that which can take hold of an idea and follow it out and see where it will lead to.

This paper has wakened ideas in my mind, not very well defined, but which may become plainer some time.

Dr. B. F. Luckey—I should like Dr. Atkinson to go further into the history or origin of the case he has just been relating of these two abscessed teeth which one dentist judged to be dead and found to be alive. I have a case of a man of forty-five years, a healthy, robust man, whose left superior central was so loose that I could almost take it out with my fingers, and there was a large abscess discharging through the gum. I pronounced that tooth dead. I did not think there was a doubt about it. I went up on the palatal side and the man began to feel pain; I went up further and discovered necrossed bone. The question in my mind is, what caused that condition.

Dr. Atkinson—I had a lady with a left superior central very much discolored, black; I thought the tooth was dead. The lateral was in like condition, and they were so loose that they moved when she spoke. She had pyorrhœa alveolaris of the worst kind, the gums remaining nearly their normal length, but the process to the ends of the roots being gone. In that loose state they miss their proper occlusion. Find some place where they shut together comfortably, and there tie them firmly together where they ought to be. Then take an engine and a corundum wheel and trim them until the occlusion is right. I was going into this left superior central until I found the condition Dr. Luckey speaks of.

Dr. Barlow—Is it possible that it may be produced by ptyalism?

Dr. Atkinson—Never. It may by mercurialization. Ptyalism means also a flow of saliva. Medical books have led us astray so much that we only have mass notions of these things. I do not know the cause of any of these things; I only know the antecedents. This young man I spoke of was a supplyer of liquors to hotels, and was much up in the night—his habits were irregular. I think he got a clip there, suffered some mechanical injury. We must not be so careful to see the origin of things. We have to do with pathological conditions; so we treat the saints as we do the sinners: when we find certain lesions of an organ we do the best we can to restore those lesions. If you place in these pockets a piece of sterilized sponge, the wound heals like a fresh cut. If it does not, there is something offensive in your sponge, or you have not removed all the dead matter. I have the case of a lady who was under the treatment of several surgeons and dentists for three or four years for what was supposed to be the result of the death of the pulp in the right superior lateral incisor. Both bicuspids were extracted. I burred out from half to three-fourths of an inch of carious or necrossed bone, and inserted a sterilized spone, which took hold for half to three-fourths of an inch of the wall, leaving a tract where it did not take, which I attributed to some defect in the sponge. I inserted another piece of sponge and gained a sufficient amount of new tissue to make sockets for the remaining teeth. If you allow the walls of the cavity to collapse after taking out the dead bone, the pabulum is not sufficiently stiff to resist the pressure of the lip.

You need to keep the pocket full, so that the pabulum can be wept into the sponge and form a clot, out of which the new tissue comes.

DR. BARLOW—I did not exactly mean ptyalism, but the action of anything of the kind.

DR. ATKINSON—When one member of the body suffers, all the other members suffer with it. Carl Heitzmann told you that the human body was a big amœba, one solid mass of ameboid structure. If you have any deterioration of the nutrient currents and blood currents, you will get a drain that will continue a long time, and the patient will be debilitated by it. Mercurial action is a specific action upon the connective tissue corpuscles, and is expressed by a destruction of the dental ligament of the gum at the neck of the tooth. The alveola-dental membrance is made up of connective tissue. When we shall have studied these fine points more we may be able to catch the significance of the fact that a substance presented to the organism may be either a food, a poison or a remedy, according to circumstances, and to know when it is the one or the other.

DR. M. L. RHEIN—I have a case of pulp trouble to report which I think is of great interest. A gentleman of about 28 years of age came to me, two years ago, with a second superior bicuspid very badly decayed on the anterior approximal side, so much so that a part of the palatal wall was gone as well as the approximal wall. The pulp was exposed and the gentleman had been suffering with toothache for seven or eight days. His constitution and general appearance indicated a most favorable case for capping and preserving the pulp alive. I capped the pulp and filled the tooth, and from the outside it appeared to be most successfully done. Nine months after capping the pulp I removed the major portion of the filling and replaced it with a gold contour filling. Up to that time there had not been the slighest indication of trouble. The point of interest is this: that gentleman came to me about four weeks ago complaining that for the past week he had been suffering with pain in that tooth. The question in the diagnosis was whether that pulp was dying, or whether it was dead, or what was its exact condition. It was sensitive to both hot and cold water, and bothered him in so many ways that the diagnosis was extremely difficult. I finally concluded that there was a little pulpitius, and I treated it for four or five days with bags of capsicum and ginger, but without any decided relief. Then I drilled through the centre of the crown, leaving the gold contour, especially on the approximal and buccal side, intact. In getting down to the pulp I had to cut the palatal part of the filling away. When I came to the pulp I found it dead, so entirely dead that there was gas present, and pus. What surprised me most was the fact that this tooth was quite sensitive to thermal changes. I removed all the pulp, as I supposed, from the canal; and, on account of finding pus, I treated it with iodoform and peroxide of hydrogen and sent the patient away. In a few days he came back and I filled the tooth, supposing that was all there was to it, as those teeth generally have but one root. When I put

in the temporary filling I examined the cavity with a very sharp magnifying glass, and I noticed a little dark line leading from that root up to the gold on the buccal surface. I did not look for anything of the kind in a second bicuspid. I wedged out the rest of the filling and disclosed my capping, which I had not touched before. I found another root to the tooth. I removed the cap and found the pulp perfectly healthy underneath, as healthy a pulp as any one wants to see. There was a line of dead pulp leading from the buccal root to the palatal. Then the question arose, after disposing of the dead pulp what to do with the live one, whether to leave it there or not. Finally I concluded that after so much irritation I would not risk it any further, and removed the live pulp. I am rather afraid that I did it contrary to the advice of Dr. Atkinson in the matter, but I thought that, taking into consideration the amount of irritation it would receive and the septic condition present from the pus I found there, it was preferable to avoid that risk. The difficulty of diagonsis was explained when I found the second root. There were at the same time indications both of a a live pulp, sensitive to heat and cold, and of a dead pulp.

Dr. Richards—While Dr. Atkinson gives us a good deal of encyclopedia every time he gets up, we get a great deal of practical benefit from his talk. Therefore I move a vote of thanks to Dr. Atkinson for his able paper.

Dr. Richards' motion was carried.

THURSDAY MORNING.

Roll called by the Secretary.

The application for membership of S. S. Hawley, of Newark, was received; sponsors, Drs. Charles A. Meeker and James G. Palmer.

The Examining Board reported favorably upon the application for honorary membership of Drs. A. L. Northrop, H. A. Parr and A. W. Kingsley, and S. S. Hawley for active membership.

Drs. Marsh and Eaton were appointed tellers, and the above gentlemen were declared elected.

Dr. H. E. Roberts resigned his membership in the Society. On motion the resignation was accepted.

Prof. C. N. Pierce then addressed the Society on

A FACTOR IN TOOTH PRESERVATION.

Mr. President and Gentlemen of the New Jersey State Dental Society—I fear that I am trespassing a little upon your good nature in coming before you without a written essay, but my time has been so limited in preparing for this occasion that the very best I could do was to arrange some thoughts and give them to you as well as practicable under the circumstances. In answer to

an inquiry from my friend Dr. Palmer as to the title of my subject I wrote him that it would be "A Factor in Dental Caries," but I subsequently changed it to the more intelligent one announced by your President to-day, "A Factor in Tooth Preservation;" and I am under obligations to my friend Dr. Atkinson for opening the way for me last evening by his opportune remarks on the prophylactic influence of function, because that has been really the subject of my thoughts for the last three months and was the point I endeavored to make in my remarks a month ago on the comparative anatomy of the teeth, before the New England and Connecticut Valley Dental Associations at Worcester, Mass. What I shall endeavor to do now is simply to elaborate the remarks of Dr. Atkinson last evening, and confirm them with some illustrations of development on the teeth of the lower animals, hoping with these to leave an impression upon your minds which will not soon be erased.

First, a word or two upon dental caries. If you ask the numerous teachers in this country to formulate an answer to the inquiry, What is dental caries? they will probably tell you it is molecular death and disintegration of the tooth tissue. We will not stop now to discuss the correctness of this answer. It is one that has been almost universally given to classes in dental schools as well as in the meetings of dental societies. Molecular disintegration we have, but that this is preceded by death is doubtful indeed, and the consideration of this one point in the pathological phenomena is well worthy of consideration by any dental society. Many theories have been advanced by thoughtful men regarding the cause of this pathological condition designated dental caries. First it was held that it was wholly due to chemical action; and there are men to-day who take the ground that that is the only cause. They claim that there is some solvent, an acid, in the mouth, which comes in contact with the tissues of the teeth, breaking up the continuity of the structures and dissolving out the lime salts or inorganic portion. Then there are others who take the other extreme, and assert that dental caries is the result of vital action; that through some deficiency in nutrition and other abnormal systemic conditions, there is a loss of continuity between the hard or inorganic and the soft or organic structures, and in consequence of that loss of continuity, the dissolution of the teeth naturally follows. Another theory is that the cause of decay is chemico-vital; that perverted or imperfect nutrition during the calcification of the hard tissues results in abnormality both as to quantity and quality, this being a predisposing cause of caries, the teeth then becoming an easy prey of some solvent in the mouth, which is assumed to be an acid. We have also, within the last few years, had advanced by our friends abroad as well as at home, what is termed the parasitic theory, that decay is produced by certain low forms of vegetable or animal organisms in the mouth, some of which by their roots or mycelium burrow into the tissues of the teeth and leave them in a condition to readily break down; and that other organisms, by virtue of their contact with the oxygen of the atmosphere, eliminate an acid, and in that way we have a sol-

vent produced which disintegrates the tooth structure. These latter theories entirely overlook the fact that many of these organisms are merely messmates, that they live in the mouth by virtue of the pabulum on which we also live, and are not parasites at all; simply living on the remains of our food, on dead and refuse material, and not interfering with the live tissues in any way. Then we have still another theory, that advanced by Dr. Bridgman in England, called the electrical theory; that is by reason of a want of correspondence in the electrical conditions of the organic and the inorganic structures that the teeth are broken down.

The fault I find with all of these theories is not that they, or most of them, have not some grain of truth in them sufficient to warrant their advancement as elements in the problem of decay; but that it is claimed by their several and special advocates that they are *the* element. In attributing dental caries to any one of these supposed causes we seem to entirely ignore the laws governing the development and nutrition of structures. When a tooth is developed it is in accordance or in correspondence with law, like other tissues. Its morphology, its structural arrangement, its density, its size, its location, all are subservient to its function and nutrition. If function is delegated to some other part or organ, nutritition is likewise diverted. Health and normality in any and every respect must be preceded by normal or natural exercises of function. The arrangement of the tissues, the size, shape and density of the teeth are not matters of whim or accident, but are due to the natural result of the mechanical forces that have been brought to bear upon them; they are the result of the degree and direction of force that has been exerted upon them by the food habit through many successive generations; they are in exact correspondence with the amount and direction of force that has been and is exercised in the preparation of the food, or in the exact ratio of the amount of resistance offered by the trituration of the food upon which the animal lives. This brings tooth formation down to the single point of food habit, and in my estimation *tooth formation and nutrition are the result of food habit.*

In the treatment of the mouths of many children we see unmistakable evidence of this absence of function. We risk nothing in saying to the mother or guardian of many of these patients that the food is washed into the stomach with one of various liquids without mastication; and we may with safety and great propriety add that unless their is some change in the food habit of this child the success of our efforts in behalf of tooth preservation will be but limited. Fluids must be restricted at meal time. Solid food must be substituted for the semi-solid, and the eight or ten minutes usually occupied in the consumption of a meal must be extended to twenty-five or thirty minutes. I say constantly to the parents of my young patients, if you want to save this child's teeth you must banish drink from the table during meal time; let the children drink all they want before and after meals, but at meals the food should be taken as nearly dry as possible, and let the child spend half an hour

or more in its mastication, utilizing the natural secretions, not washing down its food with copious draughts without an effort on the part of the teeth to triturate and prepare for the subsequent digestive process. I bring up this point here because I want to make it more clear that, in my estimation, the loss of function is one great cause of this rapid decay of the teeth. The healthy or normal development of the teeth is exactly in proportion to the stimulus of the resistance that is offered to them in the cutting or mastication of food. Now, gentlemen, a recognition of the foregoing is what interests *us* as dentists, and on behalf of *our patrons* or *patients* for their own welfare and comfort. In continuation of my remarks I hope, with the aid of these specimens upon the table before us, to show you how these various tooth forms have been the result of jaw movements, and these movements again a necessity by virtue of the kind of food, and so, in regular sucession, we can safely say, *first,* that food habit has been the important factor and controlling influence in shaping tooth forms; *second,* that the restriction and limitation of diet has contributed to specialization of the teeth; *third,* the degree in which teeth are changed or modified in form and structure is in proportion to the differences in the degree of resistance to be overcome in the mastication of food.

For the sake of perspicuity, and at the risk of being tedious, let us first define a tooth, with its location, function, etc. The definition given is that it is a hard substance projecting from the surface of the mucous membrane; it is differentiated from the surrounding structures and opposes another tooth, or a dental plate, or else in its function works against some other substance less dense. It is located in the anterior or preassimilative portion of the alimentary canal, and in the mammalia it is confined to the inferior and superior maxillæ, always working in a vertical or modified vertical direction and against other teeth or some dense substance, so as to stimulate its nutrition and health.

All teeth may be arranged into five classes. First, the simple cone-shaped tooth, which is represented in the cuspid of the carnivora, the prehensible teeth of all animals swallowing their prey whole, and a large glass of fishes, as well as the poison fang of reptiles and the teeth of the sperm-whale. These are among the simplest forms of teeth found in the animal economy. The next would be a chisel-shaped tooth, examples of which we see in the incisors of the rodents and other vertebrate animals. In the third class we place the trenchant-shaped teeth, seen in carnivorous animals, which shut over each other like the blades of a pair of scissors, and are for lacerating or tearing. Then come the teeth which we find in the monkey tribe, having little tubercles on the triturating surface for crushing. The fifth and last class are the molars, represented by those of the elephant, and of the rodents, but the most specialized or typical are those found in the herbivora, used for grinding grass and dry food. Nearly all the teeth of the animal kingdom may be placed in one of these five classes, by a little addition or subtraction, corresponding with modifications in food habit

and mandibular or jaw movement. When we pick up a mandible that is armed with cone-shaped teeth we know very well that its movement is limited to a vertical or up and down motion. The teeth in it are not for the trituration of food, but for seizing it.

Corresponding with this cone-shaped tooth and the vertical motion, which is found in all carnivorous animals and which is not a mere matter of taste of accident, but of necessity, because of the class of food upon which the animal subsists, we find the shape of the condyle and the glenoid cavity to correspond, the latter hugging, or so adapted to the former as to preclude any other motion. So we see that the food habit controls not only the movements of the jaw and shape of the teeth, but the form and adaptation of the condyle and glenoid cavity. We now take the other extreme in shape, represented by the molars of the rodents and the elephant, and we find instead of the glenoid cavity a convex surface, and the condyle a flat or slightly concave surface, which slides over the convex surface of the glenoid cavity; and this arrangement permits not only a lateral motion of the jaw, but the antero-posterior, which is so essential to the rodent. But the food habit of the animal was the first factor or necessity which produced the lateral and antero-posterior motions, and these motions gave us the tooth form, the condyle articulation of necessity following. We might follow this up through the whole anatomical structure of various animals, and find corresponding results in the digestive organs of the animal as well as in the modes of progression.

The teeth of the mammalia, and indeed nearly all of the vertebrate, are made up of three tissues; dentine, cement and enamel, the enamel germs being present in all. In a large class of animals, as in man, these tissues are arranged with the dentine in the centre, the enamel covering the dentine of the crown and the cement covering the dentine of the root. This is the common arrangement in teeth of all carnivorous and omnivorous animals; and in these animals we find the teeth less specialized than in the herbivora and rodentia, where instead of having the enamel covering the crown it is arranged in transverse lines running across the triturating surface, or the peculiar *W* shaped pattern, by a dipping in of the enamel from the sides, as is seen in many of the herbivora. Where there is an antero-posterior motion of the jaw in connection with the lateral we have these lines running transversely across the teeth, and with this the most complex structural condition. The object of this arrangement is patent to any one, the three tissues being of different degrees of density, and standing side by side, there will always be an uneven surface, with the most dense tissue prominent which is most efficient in the preparation of the dry food upon which the animal subsists, and again we recognize that this peculiar adaptation of the teeth to the necessities of the animal is the result of food habit. There is no exception to this rule; it is the force exercised upon the teeth which modifies their form and structural arrangement.

If you will bear with me a few moments I will show you how true

this is throughout the animal kingdom. Taking first some illustrations from invertebrate animals without a back bone. Their teeth are with few exceptions not dense, but shaped by food habit and jaw movement so as to be efficient in mastication. Commencing with this little animal which I hold in my hand and with which we are all familiar, the echinus, designated Aristotle's lantern because first described by him, we find that it has five teeth and five jaws, moved by thirty-five muscles. It subsists upon shell fish, and by the movement of these teeth with sharp cutting edges it drills a hole in the shell of its prey and sucks out the pieces. The echinus is an animal with primitive nervous organization, yet it has sense enough to have good taste, and by its liking for shell fish does considerable injury to the business of the oysterman. This is one of the most complete arrangements of tooth structure that is found in the animal economy.

Our next illustration we take from the common leech. We are all familiar with the manner in which this articulate makes its wounds. The animal has three jaws, which are simple semi-circles, and are armed with teeth or denticles not for mastication, but for cutting the flesh of its prey and making a wound from which the animal draws the blood upon which it lives. It shows the adaptation of the teeth to the necessities of the animal. The drawing upon the black board shows the jaws attached to the second segment and so arranged as to make a tri-radiate wound.

Among the intestinal worms, I may instance the tape-worm. You know how difficult it is to dislodge this disgusting parasite from the alimentary canal. It has a circular mouth armed with little hooks which seize hold of the walls of the alimentary canal and hold fast while the animal sucks the juices upon which it subsists. In that way these hook-shaped teeth aid the animal in obtaining its nutrition.

Then we come to the mollusks, of which the varieties described may be numbered by the thousands. We may divide them into two classes, those with and those without heads. The headless ones have of course no teeth; while the food habits of some with heads are without the necessity for teeth, and hence they are edentalous. But in those that have teeth we find the variety in shapes corresponding with the difference in diet, so as the little mollusk lives upon vegetable, animal, or liquid food, the teeth quite as readily correspond to its necessities, as do those of the vertebrate series to theirs. So in these again we have this selective influence of function giving us structures in these plastic animals which are as fully adapted to their needs, as are those enjoyed by the higher animals, *teeth modified in shape, substance and arrangement by food habit.* The different materials upon which the teeth are required to act and the different movements of the tissues in which they are implanted, tend to produce that peculiar shape and structure which is most efficient for its nutrition.

Passing to the vertebrate, we have a large class of vertebrate animals whose teeth we know have been either modified or wholly lost

by reason of changed food habits. Birds to-day have no teeth, yet Professor Marsh, of Boston, has described some fossil birds which were furnished with well developed teeth like those of other vertebrates. There is an immense variety of fishes, which are placed by Professor Marsh in five great clasess: the leptocardi, marsipobranchi, elasmobranchi, ganoidei and teleostei. The first of these described by Haeckel as the acrania (without a skull) have no teeth, while the others have almost an endless variety The marsipobranchi, of which the lamprey are examples, have pointed, horney teeth. The elasmobranchi, embracing the rays, sawfish, sharks, etc., have teeth with sharp points, peculiarly adapted to their habits of life, and so on throughout the whole series, furnishing a greater variety of tooth formation and attachment than any other class of animals.

Before leaving the fishes I want to direct your attention to this little toad fish which I hold in my hand. We find the body covered with spines, and a similar one in each jaw, except that their location has given them a different function and they have become modified by virtue of it. This is an illustration of the dermal origin of the teeth, and is equally well shown by a newly hatched dog-fish, where at this age you can scarcely distinguish the spines located on the jaw from those on the dermal surface. These becoming modified by function, soon present a different appearance.

Next we come to the reptilia. They have but few teeth. A poison fang is remarkable for the peculiar arrangement for conducting the poison into the wound made by it. It would be much like taking an ordinary tooth with the enamel and dentine on it, and rolling it out flat and doubling it upon itself, the pulp cavity occupying its normal position. In folding it over we get a semi-canal connected with the sac of poison fluid at the end of root. The direction of the tooth is horizontal when at rest, but when elevated to pierce the prey a membrane is drawn over this semi-tube so that it makes a complete canal, and as the animal strikes its prey the pressure upon the sac at the root ejects the fluid through the canal into the wound made by the fang. Another peculiarity is that we have an endless succession of these fang germs, so that when one is lost another is developed in its place. This is true of nearly all the fish series; where teeth are lost by violence or injured by wear new teeth soon take their place.

I have here a peculiar specimen which represents the edentata, or insectivorous animals, an ant-eater, which is deficient in front teeth. The molars it has are little round pegs, made up of dentine without enamel. The front are deficient, yet in some of this group there is a lateral incisor, and in nearly all there are germs of both lateral and central incisors. They have not been developed for generations, yet the germ being present represents the orginal idea and form of development, although it is aborted. Loss of function has greatly modified the teeth of this animal; the relegation to the tongue of the function of the incisors has made those teeth no longer necessary, hence they have disappeared, only the germs remaining to indicate the former type. The posterior teeth, having no hard

substances to grind, have wholly lost their enamel. They are specialized for the services of the animal. This is not the true armadillo, although allied to that family.

As teeth are specialized by function and adapted to certain kinds of food they are usually reduced in number; so also as we go up in the scale of intellgence from the lower to the higher, increased brain devolpement seems to have a similar influence, the ancestral animal usually having had a great number. Relegation of function brings diverson of nutrition.

Next in order comes a class of aquatic animals which includes the sirema or sea cow, an herbivorous animal living in the water, and which is furnished with molars adapted to its diet. To this class of aquatic animals belongs also the denticele or sperm whale, whose teeth are strong and cone-shaped, giving us the idea of prehensile use, and ranging in size in correspondence with location in the jaw, the heavier ones being located nearer the articulation. Its prey is seized and swallowed whole. In the mysticete, right whale or balenide, the largest mammal, we find a set of teeth in embryo, but they are functionless and absorbed before birth. At birth, in place of teeth, are developed thin plates that run transversely across the jaw, some two hundred in number, and varying from ten to twenty feet in length. These great plates, which furnish the whale-bone of commerce, are attached to the upper jaw, and form a sort of fringe on their lower edge, in which, as the animal swims through the water with open mouth, thousands of small jelly-like animals, which abound therein, become entangled. The water being expelled, these are transferred to the æsophagus of the whale and become its food. These plates are an adaptation of teeth, specialized to the needs of the animal and serve it in its nutritional demands.

In the quadrumania, embracing the lower monkeys and lemurs, we have teeth for crushing fruits, tubercular teeth, and very closely allied to those of the human family, but somewhat different in form, and in some greater in number, the cuspids being more prominent and serving the males for weapons in combat.

Then we come to the anthropoidea, a group that embraces man as well as the higher apes. This group has teeth alike, save in the prominence of the cuspids; but in this ascent in the scale towards man we lose some of the teeth, the lemurs and lower monkeys having thirty-six, while the anthropoidea have but thirty-two; and it is a question worthy of consideration whether the frequent *absence* of the third molar in the human family is not in the same line of reduction, absence of function sending the nutritive current to other localities. It is probable that with a continuance of our present diet and manner of living it will not be many centuries before man will have twenty-eight instead of thirty-two teeth. It is also probable that this reduction will be facilitated by this effort of specialization, which is constant. Man is an omnivorous animal, and in his mode of living his teeth are not subjected to the use or the kind of diet which is best calculated to insure their health. If

we had the opportunity of examining any large class of people who were now and had been for some centuries confined to a limited diet with little or no animal food, we should expect to find incisors well developed, cuspids somewhat suppressed, and molars assuming a more herbivorous type, having cutting tubercles and showing a tendency to the infolding of the enamel. We do know that during the period in this country when the negro of the South was confined to a coarse diet he had fine incisors and strong molars. His cuspids were not more prominent than is seen in the higher races. This we should attribute to the fact of his diet being largely graniverous and coarse. You know that in all strictly herbivorous animals the cuspids are either entirely deficient or are merely present in a transitionary form. The carnivorous animals, whether aquatic, terrestial, arborial or fusorial in their habits, or whether occupying the polar or equatorial regions, are alike true to their cuspids and carnivorous molars—illustrating again the influence of food habit.

The rodentia, of which this beaver is a very good type, have finely developed incisors growing, going from permanent pulps, and molars with transverse lines of enamel. These forms are the result of the gnawing habit, which necessitates the antero-posterior movement of the mandible. Accompanying this is also the peculiar arrangement of the three hard tissues of the teeth, which always gives the incisor a sharp cutting edge by placing the enamel, which is most dense, on the external or labial surface, the dentine next, and the softer tissue, not unlike cementum, on the internal or palatine surface.

Now, Mr. President and gentlemen, I might continue these illustrations through every modification of the animal kingdom and show you that wherever there is a differentiation in the food habit, there is a corresponding one in mandibular movement, which is accompanied by a tooth formation resulting therefrom; and that the condylar attachment or articulation is so constant and true to the mandibular movement and tooth form that when once recognized there would be no difficulty in describing the movement of jaw and the tooth form belonging thereto.

In recognizing the conditions which induce morphological peculiarities and modifications in dental structures, we certainly have some light thrown upon a condition which might induce degeneration. In the one case, functional activity followed by healthy nutrition; in the other, functional inactivity, or the absence of function, followed by diversion or relegation of nutrition to other localities. In conclusion, gentlemen, let me once more impress upon you the importance of the influence of function as a prophylactic agent, and suggest that in our duty to our patrons we can render them no better service than by enlightening their underderstanding to this extent.

President Scarborough—The very instructive address of Prof. Pierce is before you for comment and criticism. Prof. Abbott, will you open the discussion.

Dr. Frank Abbott—I dot not know, Mr. President, as I can do anything in the way of opening a discussion so large as this seems to be. As far as comparative anatomy is concerned, I have not made it a special study and really know very little about it. I would not attempt to talk upon the subject at all. There is one idea in the remarks of Prof. Pierce that I want to mention, and that is, as I understood it, that all animals, no matter what kind or where they may be or what they live upon, are formed after a certain type. By whom that certain type was originated, or when, or where, I am unable to say; but that that type of individual was intended or expected to live upon certain kinds of food, and that appropriate teeth were placed in its mouth, or do grow there, for the purpose of obtaining and preparing the animal's food and furthering digestion, I have not any doubt; and that change of food, or the necessities which bring about such changes, do modify the form of the teeth, as has been so very beautifully illustrated by my friend Prof. Pierce, I have not any doubt at all. We know it is so in man. I doubt very much, however, if even in a thousand years, notwithstanding the changes that may take place in the habits of the human race, I doubt very much whether the ordinary type of a set of human teeth will be, as to number, twenty-eight instead of thirty-two. It is a proposition that I should question a little bit, although I do not expect to be there to prove or disprove it. If there is any evidence of such a change at the present time I can hardly see it myself. I know that some men who claim to be very learned on this question assert very emphatically that the time is fast coming when the wisdom teeth will be no more in the mouths of the human race and will never appear again. I heard a young professor from Princeton College not long since make this statement, and he gave his reasons for it; but I must say that I have not seen any evidence that would warrant such a prediction. If I were to judge from what some of our older dentists did years ago, and are doing to-day, I should sooner believe that the first teeth to be missed from the typical set would be the sixth year molars; that they would eventually fail to come into the mouth at all, by reason of the fact that those teeth are extracted more frequently to-day than any other teeth in the mouth of the human family.

With reference to the subject of the preservation of the teeth, which is one of the greatest importance to us, the Doctor very correctly says that the exercise of the proper function of the teeth is the greatest natural preservative of those organs. I would go a little further than that, further than the function of masticating the food, and say that I believe that that vulgar, unpleasant, disgusting habit of chewing-gum has in many instances much to do with keeping the teeth of children from decay. It cleanses the teeth in a manner that nothing else does: even the toughest beef steak you can find is not half so serviceable in this respect as a big gob of spruce gum. Tooth preservation is largely a matter of cleansing, and chewing gum is on operation which cleanses the teeth in the most perfect manner, forcing out of the interstices between the

teeth every particle of food or anything that may have a tendency to do harm there.

The Doctor mentioned a number of ideas or theories in reference to the destruction of the teeth by caries, among others the septic influence or cause of decay in the teeth. This low organism business has been run almost into the ground. It has been worked over and over in different directions; and a German who has recently experimented with sterilized earth has discovered that whatever you plant in earth that has been sterilized, no matter what it is, remains as dead matter and will not germinate at all. And Pasteur has discovered by numerous experiments that if food that has been sterilized be put in the stomach of an animal it will not digest all. And the great comma baccillis, which was lately believed to be the germ of Asiatic cholera, has been shown, as it is claimed, not to be the cause of cholera at all; even Dr. Koch has come to that conclusion. So it is that things become mixed in such a manner that we are all at sea. The fact is that it is probable that our coming into life in the first place, as well as our existence after coming into life, is more or less due to the influence of these very organisms that we have been talking about so much as being the cause of disease and destruction; and that theory may still be true; but the fact that we cannot digest our food and cannot raise a plant without the assistance of these organisms, the fact that both vegetable and animal life is dependent upon the action of these little organisms for existence, is almost startling to us. The opinion has prevailed that we are overrun with millions of different kinds of minute organisms to such an extent that we are almost ready to be carried off at any moment; where to we don't know, what is to become of us we don't know; only that our teeth are being eaten up and destroyed by the thousands and millions, so that every time you look in the glass you expect to see a hole bored through a tooth. It has come to that point that it is really a bug-bear with us, we have something before us all the time that is ready to destroy us, even to the point of destroying our teeth. But now things are taking a different turn on the other side of the water, and also in New York, where in a certain laboratory this same process is going on and the same experiments are being made in a very quiet way that have been made by Pasteur in Paris and by Koch in Berlin, with the view of determining this question, if possible, and utilizing any new facts that may come up.

Dr. W. H. Atkinson—I hesitate, Mr. President, to enter into the discussion of this very complicated question; not because I have any objection to the investigation of it, not because my affections are not deeply engaged, but because the words that we use to express the concepts of the mind have been so bedeviled by the Mugwump wretches who pretend to have a knowledge they do not have, that we have to go to the A B Cs and continually refer to first postulates, where any proposition can be satisfactorily proved in the last demonstrative analysis. There is in it a significance, or a lack of significance, or a specific perspicacity that is exactly indicative of

the simplicity or vagueness that pertains to all the concepts of all minds in examining the processes that come in below the plane of sensuous perception. The last speaker said sameness, but he did not mean it; he meant similarity. He said the *same* process of investigation was now being carried on in New York that had been carried on in Europe; and you see the ridiculousness of that statement. It cannot be the same; it only can be similar. Similarity never is identical, never can be. This is what ails us all the way through. We look through a microscope that is arranged for our eyes, and we see a certain thing, and another man comes to the same microscope, gets what he supposes is the same distance of the eye from the eye-piece; he sees nothing, and he says, "By God, it an't there!" Had he had some such guide as Heitzmann to take his hand and say, "Be very careful now, and turn that fine adjustment until the image is clear before your eye," he would have been able to verify the observation that was pronounced by the first observer. It is very well for us to know a little for sure, that shall be a criterion by which we can demonstrate to all who are capable of understanding anything that we do know that thing. I am a great democrat; not in a Mugwumpian sense, but in the true sense of the rule of the people. What is necessary to sight? A certain number of rods and cones of Jacobson's membrane must be covered to form an image capable of being transmitted to the sensorium. Some eyes have not enough of these rods and cones to give space for the image, and hence they cannot see. That is physics for you. That is not metaphysics, although it is the outcome of metaphysics, you bet your last dollar! So when we say we want a new investigation, or that we are going to be offered the results of original research—God save the remark! If it were *re*-search it could not be original, for *re* means again. When we try to get at the origin of changes and modifications, it is just about as if we were to undertake to talk about conic sections before we had studied the alphabet. And yet I am for those very fellows who have not studied conic sections in the regular way but have arrived at them through the illumination of the understanding akin to those who recorded them in our scientific works.

I was delighted with the patient and lucid description *in parvo* of all that has been formulated in dental morphology that we have been favored with this morning by Professor Pierce; and I feel like wanting to have power myself to hold my mind in proper poise, and to pray that you all may have patience and penetration enough to digest some of this food that he has given us, and that we have not quite got the masticatory apparatus to reduce to pabulum. The old saying, that has been kept away from us, that "The inspiration of the Almighty giveth man understanding," has never been more clearly proven than it has been in the history of these investigations that are called scientific; how, in the last analysis, everyone of them is dependent upon an assumption to start with. Whether we ever shall get at the point of being the first postulate in its nakedness I do not know and I do not much care, for if I had that as a

starting point I would hold myself bound to riddle the universe from stem to stern and make clear all the darkness in it. Then what would come? We should not come to see the earnest, intelligent countenances that assemble from year to year at Asbury Park when the State Society of New Jersey has its meeting; we would have no ambition and nothing to look forward to; so I don't want to know it all, nor to have all the work done, nor to eat all the dinner at one time; I don't want the day to come when there shall be no aspirations and no progress.

When was there such a day as this, when a quiet, modest, shrinking, earnest, clean-purposed man could talk so beautifully about things that were shut entirely away from any but the sacred few,—God save the sacred; which was just because this knowledge was not held for the good of the whole, but for a very few who kept it in the dark and made us travel through the weary way of observation in paleontological research, or be without the knowledge that they had attained by reading the records made up in the earth's crust by alternations of generations of the various forms of inhabitants of this planet.

If we would patiently look at the metamorphosis going on by the seashore or in marsh pools, if we would pick up a little of what we have called duck's meat, or green frog spawn, and which the scientists call sphagnum, and put it under a microscope and study it as the first step in the class of rhizopods, we would begin to be able to follow in the line of observation that would give to us a basis of reasoning upon these morphological changes. But we have to get bread and butter and we cannot devote all our lifetime to these experiments and verifications; we can take the syllabus of other men who have done so and have arranged and classified and published their observations; we need not go through the weary detail of proving what other observers have recorded in respect to the analogies and relations of these things. What does it amount to? Mental gymnastics. That kind of mental exercise covers the same ground for the mind that the gymnasium does for the body. If a man has not sufficient legitimate exercise in doing something that is of interest and utility, then he may go into pure gymnastics for the sake of obtaining exercise. Gymnastics in that sense is favorable to the development of power that may be applied to the acquiring of true education; not the believe or be damned kind of doctrine.

The changes of structure that we observe in dealing with odontology are the result of the animal's inheritance of the molecular experience of his whole ancestral line. What did the doctor say about the echinoderm? That the ancestors of the present specimen had originally been covered with spines inside and out, and that by stress of necessity some of those spines had been so modified as to become teeth and perform the required prehensible and masticatory functions, and so we have developed the wondrous Aristotle's lantern. And for what? The preservation of the *ego*, the *I*. That is the biggest business they could be about. How did they do that? By stopping the developing energy at the point that met their de-

mand. It is consciousness being arrested that produces sub-consciousness, the interactions of which produce sentientcy, the five modes of which we call the senses. Now keep to the line, and see if all this was not a coming out of the unseen and the unknown into the seen and the known. When we shall have seized upon and digested that idea we will be able to comprehend that those who have claimed to be the only missionaries of truth and light have been leading us to the devil and darkness, and that we who as humble children are endowed with the divine afflatus and a desire for truth, have as rightful and regular an inheritance as have they who claim the birth-right as the legitimate descendants of the legitimate scientists; then also will we see the relation an organ bears to its function and how organs are modified; and the fact that the elaborate machinery that functions are operated through has a designer, may find a lodgment in the minds of the investigators who so proudly call themselves materialistic scientists, whose destiny it is to investigate and define the unknowable, as Huxley says. I am full of it; and you all have a right to be just as full of it. If we could subordinate the money getting part of the business and be rid of the attendant worry, we would have our minds clear to see that, as Prof. Pierce said, it would take a thousand years to make an impression that could be presented to the crudity of the senses; and that not a thousand years, but probably a thousand times ten thousand years of molecular experience of our ancestral line is recorded in the endowment that has made us minus the third molar.

Dr. Pierce—Professor Abbott mistakes the condition of affairs when he speaks of types of animals being established and those types having fixed organs and fixed foods. The effort of scientists to classify and arrange into distinct classes and orders has led to continued confusion. The fact is, there is such close relationship existing and at the same time such a recognized differentiation between animals that it is difficult to find distinctive features sufficiently highly specialized and reliable to enable the comparative anatomist to say that this is a distinctive type or class without resemblance to any other. The finding of intermediate and transitional characteristics makes it always difficult to arrange or classify animals and leads to varied results by different anatomists.

As a single illustration: If our friend, Dr. Abbott, will visit Professor Marsh, or I. L. Mortman, of the National Medical Museum, he will, I think, be told that the ancestor of the horse was a very different animal from the one he so much enjoys driving. The toes and the teeth both have been much changed by virtue of change of habitat and food. Forty-four teeth was the typical number, but now forty and forty-two suffice. Other groups of animals in the same manner have suffered a reduction in the number of both the incisors and premolars; and, reasoning from analogy, we come to the conclusion that man will have at some not far distant future only 28 instead of 32 teeth.

With reference to what has been said regarding the sixth year or first permanent molars, these, you know, are classed with the per-

manent teeth, but they are really deciduous and belong to the deciduous set. What are deciduous teeth? Where do they originate? The deciduous incisors and molars are erupted by the 25th month; the permanent teeth following those are buddings from the inflection of the columnar epithelium that gives birth to the deciduous teeth; they are not original or primitive, they are secondary. The first permanent molar is an original inflection, not a budding. It is developed the same as the deciduous teeth from an inflection of the columnar epithelium and not by a budding from another tooth; while the second and third molars are the result of buddings, the second from the first and the third from the second. So in this fact we have some reason for anticipating the temporary condition of the sixth year molar; it belongs really to the deciduous teeth by virtue of its being an original inflection and not a budding from a preceding tooth.

If we look at the typical mammalian teeth we find, taking one side of the upper jaw, three incisors, one cuspid, four premolars and three molars. That gives us forty-four teeth. How many mammalians have to-day the typical number of teeth, forty-four? Our typical dog has forty-four teeth, but the different breeds of domesticated dogs vary greatly in the number of their teeth. They have been quite modified in that respect, owing very likely to specialization in conformity to changed diet. It is very probable, as Dr. Atkinson says, that there is much in this that is yet theory, but we cannot help it. Theory must always go in advance of demonstration, and we must examine and accept the most plausible theory. I did not want Prof. Abbott to go out with the impression that the theory of permanent forms and types was accepted.

Dr. Atkinson—I have a little fatherly feeling towards Dr. Abbott too, and I do not want him to go out of the room with the idea that mutilation is transferable to the progeny of the mutilated parent.

Dr. Abbott—It is sometimes.

Dr. Atkinson—Never. I also want to take care of my Quaker friend. He tells us that types are not established. I would like to know if he has been to heaven to see what the types are; or whether he means that a type is established after it is approved by the poor groundlings, or whether this matter of budding has not something to do about it, that was revealed to us, as a process, by Goodsir. What is budding? It is a demand of consciousness. Does consciousness throw away the organ that is no longer in use? The evidence is that it does not, but that it tends to form buds, whether there is any formation of teeth or not. Even the eels, that have no enamel on their teeth, always have an enamel organ, and if the requirements of the animal should demand the development of enamel it would be evolved. Nothing is thrown away but the needless material, and there is simply a minification of a useless organ.

Dr. Pierce—Here is a skull of a squirrel which shows modification in development. One incisor, having no antagonist to wear it away, has grown to an abnormal length and formed a complete

circle. If this accidental modification had proven of advantage to the animal it might be intensified and reproduced in the offspring, and you would have a type established that would not be original.

DR. ABBOTT—That would be a modification of the type.

DR. PIERCE—Yes.

DR. ATKINSON—Not at all. It is simply an extension of the longevity of a tooth that was expected to be worn away but was not, because some Mugwump came along and knocked off the opposite tooth. I am astonished that a man of learning should advance such an idea.

DR. ABBOTT—In reference to the question of type, there is something about the type of the horse, that has been spoken of, that is very peculiar and very interesting. They claim, as you know, that the original or typical horse was a little animal about a foot long and had four or five toes an each foot and that it ran upon these toes as our horse does upon one toe. It was not a carnivorous animal, but was subject to the ravages of carnivorous animals and had to seek safety by getting out of their way, and the environments of the animal, the necessity of saving its own life and bacon, has developed the present type of horse, having but one big toe upon which it stands and runs. The horse of to-day walks upon his big toe, and it is his big toe-nail that we shoe. All the other toes, because they were not used, have dropped away. A little bit of horny growth on the shank opposite the ankle joint remains, sometimes, as a rudimentary evidence of one of the original toes of the horse, the necessities of the animal have forced it into these changes; not that the type has changed voluntarily at all. It is just so with human beings. Necessity has demanded certain changes and they have come, and do come. There is no type of mule. There is a typical horse and a typical donkey; but when you mix those types you get a modified product that cannot be carried any further.

DR. ATKINSON—You get a Mugwump.

DR. ABBOTT—Yes, and he always stays a Mugwump. He cannot propagate his species.

DR. HAYHURST—Mr. President, I am not much given to apologies, as you know; I do not think any of you ever heard me make an apology before, but I make this because I feel—and my education teaches me to go very much by feeling—I feel very diffident indeed in the offering of this paper, on account of the unfavorable conditions in which it was prepared. I am not in the habit of writing upon a subject or putting it in form until after it has been pretty thoroughly digested. But at the time when I was looking towards the preparation of this paper I was taken sick, and the consequence was that I did not get the paper finished until a few minutes ago, although I had a general idea of what I was to do. This is the fifth paper of the series which I have prepared upon the same general subject, the history of dentistry, and I think one other will close it up. I only wish to crave a little indulgence and a little modification of severe criticism for the reason I have stated.

DR. HAYHURST read a paper on

DENTAL HISTORY—No. 5.

GENTLEMEN OF THE NEW JERSEY STATE DENTAL SOCIETY:—Once more we greet each other by the shore of the "sounding sea," and as we drink in the exhilarating breath of "old ocean," and while we experience the vivifying influence on our physical being let us not be unmindful of the purpose for which we meet in these our annual assemblages—that of elevating the standard of the profession which we have chosen, most of us, I trust, expecting to give to it all the best years of our lives.

In casting a backward glance over the territory over which I have traveled, I find that my former labors have been mainly devoted to the history of the means of education in the science of dentistry, and a review of institutions for the preparation of those who were seeking to enter upon the practice of our profession.

We have brought this branch of the subject from the earliest ages, at least so far as we could procure documentary evidence, up to our own time and into our own knowledge, so that we can look with confidence into such institutions as may serve the purposes of those who may seek the best mode of entering our profession. The number and standing of these, be they schools, colleges or annexes to medical schools or universities, offers a great variety from which the student can select, as his interest or his fancy may dictate.

The succeeding pages will be devoted to the examination, or rather the enumeration of, and remarks on, the many improvements, appliances and inventions which have come into use, more or less generally, to aid us in making better work, and more of it, than we could do under previous conditions and circumstances.

About the year 1854, as near as my recollection serves me, Professor Robt. Arthur, in a lecture to the college class of which I was a member, announced that he had discovered the cohesive properties of gold foil, saying that this discovery would revolutionize the operation of filling teeth, as it has. We were taught in the olden time to fill teeth by taking the foil and making it into flat strips or ropes with the fingers, then place it into the cavity which had been properly prepared, carrying the piece down to the bottom, then folding it back upon itself, bringing it out until it protruded some distance above the crown of the tooth, then folding it back again until the cavity was full to overflowing; then, with a smooth-pointed instrument, force the exuding or protruding gold back into the cavity, thus wedging it from side to side, so as to hold it firmly in the desired position, and finish with the proper tools, making a most excellent and enduring operation when carefully and properly done.

Contour fillings at that time were unknown, and it was not until the advent of cohesive foil that the contour filling was possible. Sponge gold was then used to a considerable extent, and instruments with serrated points came into general, I might say almost universal use. This discovery and adaptation of the cohesive properties of gold foil to dental purposes was, and perhaps is, the *ne plus ultra* for dental operations.

Years passed and no perceptable progress was made either in invention of appliances or materials, and a season of quiet and repose seemed to settle down on the profession, when Dr. Flagg announced his "new departure," and there were found members of the profession who proclaimed that *amalgam* was king. I do not doubt but that most of our older members remember the controversy that was inaugurated and carried on in the dental journals of that day concerning the use and abuse of this substance. It was formerly considered a disgrace almost for a respectable dentist to use this plastic material under consideration. But the introduction of the "new departure" and the subsequent controversies have proved a blessing and have accurately determined the proper status of good amalgam. And this use, under suitable circumstances, would today receive the sanction of the best dentists in our country.

The next advance in the way of improvement in dental machinery was about 1869, and it was a grand one. It consisted in an adaptation, as I have been informed, of an old mechanical contrivance to dental purposes. I allude to the dental engine, with all its improvements in hand-pieces, drills, mallets, and other appliances. But the treadle arrangement by which the power was applied was laborious and awkward, and consequently did not prove satisfactory to many operators. So their inventive faculty was called into action for an improvement. Electricity was invoked to aid the foot, or rather to supercede the foot power. And almost at the same time the Backus Motor was adapted to the purpose of relieving the operator from the wearisome task of keeping time to the music of his own tread. Claims and counter-claims have been made by numerous competitors, and the controversy has continued and grown into such gigantic proportions that now we find ourselves involved in a war of motive powers, and it is difficult, through the smoke of the battle, to see to whom the credit of the adaptation belongs. But we can all in verity say, "may the fittest survive!"

Some of you may remember being on a committee appointed by this Society to examine and report in relation to a motor which Dr. Geo. C. Brown had put up for his own use in his office in Mt. Holly, some years ago. Not long since I was reading a pamphlet issued by the Backus Motor Company, and I found in that, in a conspicuous place, the recommendation, or rather the report made to this Society, which was published by them over the signatures of the said committee.

Before leaving the subject of motors I would like to say that Dr. Geo. C. Brown will exhibit to us at this session an electric motor, small, compact and powerful, which has been adapted to small machinery and can be attached to a dental engine. If it does what its owners claim for it it will be a most valuable acquisition to the dental profession.

About the same time that the motor question claimed the attention of the profession the rubber dam was introduced. It, with its clamps, weights and other appliances, was an immense stride in the matter of labor-saving machinery, tending to the comfort and con-

venience of both patient and operator. When we look at the simplicity of the contrivance we do not wonder at the invention as it came, but we wonder that it came not sooner.

The introduction of the Richmond crown made quite a sensation for some time amongst the members of our profession. Then came rival claimants for nearly the same thing, varying only in the manner of placing the crown on the fang, or claiming some difference in shape; certain ones showing some advantage over others in many ways, but all amounting to the same thing in principle. Let rival claimants in "wordy war contend," the outcome, I have no doubt, will be for the benefit of the human family. Again I say, "may the fittest survive."

In a comparatively recent date electric contrivances have come into successful use in the examination of the mouth and throat, and, indeed, enabling the surgeon to make such a critical diagnosis of the case as can be had by no other means.

There is another important assistant in surgical operations which should have been noticed in an earlier portion of this paper. In former years it caused as much debate amongst medical men as anything of the kind ever did. I mean "Anesthesia"—ether, chloroform, nitrous oxide, and perhaps there may be other agents, and sometimes, it may be, some enterprising individual may have mixed these substances to suit his own ideas.

When we look back for a period of thirty years we are struck with admiration at the wonderful advance in mechanical contrivances and inventions, which seem as if they had marched on with irresistable force, I trust for the accomplishment of their good purposes—the alleviation of pain and distress and the restoration of lost parts. May the good work continue.

And now, in conclusion, when we consider the many improvements and inventions that have been made, we might be led to suppose that all the field had been occupied. By no means, brethren. I believe it is the mission of the human mind to progress, develop and expand, until all knowledge may come into and under its comprehenion. And during this period of development thoughts will come and ideas mature that will result in the permanent benefit of the human race.

Dr. Hayhurst—I would like very much to get the exact dates of the introduction of some of these improvements. I am not all certain that the introduction of several of them as stated in the paper is chronologically correct. The invention or discovery of cohesive foil is not well settled. My recollection is that when Dr. Arthur was professor in the Philadelphia College, near the close of the term when I graduated, that in one of his last lectures he spoke of the discovery of the cohesive foil, possibly it was only the application of cohesive foil. At all events he spoke of it as the grand discovery of the age. I was speaking with a manufacturer of gold this morning, and he said the manufacture of cohesive foil could be traced back almost to the introduction of gold foil.

President Scarborough—There is a manufacturer of gold

here, Mr. Henry; perhaps he can throw some light upon that question.

Mr. Henry—The question asked I could not postively decide at present; but I have in my posession an old work on chemistry, published in 1828 I think, and that speaks of cohesive gold foil. I think cohesive gold foil was discovered about the time that muriatic acid was first used for the dissolving of gold. It could not be otherwise, because all pure gold is cohesive, and when muriatic acid was used in refining it it could be made pure.

Dr. W. H. Atkinson—This matter of gold is very much mixed. I was first led to know anything of the cohesive quality of gold because of my poverty. I could not afford to loose the little waste pieces of gold, and having got them wet I tried to dry them in a spirit lamp. I rolled it into a rope and drew it through the flame. I then put it into the centre of the cavity, and I found it worked so well that I used a lamp to anneal the gold ever after that. I was then using numbers three and four Abbey's foil. The first time George Watt saw me he reported that he saw me annealing gold and asked what I was doing. That occurred in Cleveland, and I moved to Cleveland in 1852. I want to refer a little to the spirit of reasonableness and the clear intelligence and native modesty of the reader of the paper. You saw how shrinkingly he came before us, fearing that he might be met with too harsh criticisms. He said that he had been in the habit of following his feelings. We are never following a safer pilot than our feelings if we take our feelings at the first impulse. They say sober second thought is the sure and true criterion, but that sober second thought has too much of the *ego* in it. Let us carry with us our religion, and endeavor to treat these things without thinking of the *ego* at all; and the best way to induce this quality is to try to take care of somebody else.

Dr. Spyer—Many years ago a manufacturer sent some gold in a letter, and the party who received it wrote to him that the gold was not good because it had stuck together; and he said that gave him the idea of gold being cohesive, and of working cohesive gold. That was some thirty-five years ago.

Dr. Atkinson—That is true. According to the postal law at that time we would have to pay for the number of sheets of paper that a letter contained; and the postage was so high that in order to make the gold pass as one sheet it was laid together, and that is the way this objection about its sticking together arose.

Dr. T. S. Waters—If my memory serves me correctly, this matter of cohesive gold was discussed in Philadelphia at the Centennial at a meeting of the American Dental Association, and I think the proceedings of the Association for that year may throw some light upon this question and perhaps give Dr. Hayhurst the information he wants. I think there were dates mentioned at that time, and that several gold manufacturers gave their experience in the manufacture of gold. Dr. Atkinson may remember it, and Dr. Pierce. This subject of cohesive gold springs to my mind the fact that I was called upon to remove a filling which had been placed in a tooth

by Professor Chapin A Harris. About five years ago I removed the filling. The lady told me it had been placed there about forty years previous to that. It was as perfectly cohesive a filling as I ever attempted to remove. That would make the filling nearly fifty years old. Whether Dr. Harris worked it as cohesive gold at that time or not I do not know.

Adjourned until three o'clock.

AFTERNOON SESSION.

Dr. George C. Brown read a paper upon the subject of

ELECTRICITY AND ITS APPLICATION TO DENTISTRY.

Thinking that a brief history of electricity would be of interest to you I have taken the liberty of going back to the earliest recorded accounts, as compiled by W. J. Lancaster, F. C. S., F. R. A. S. The first record he gives relates to 4,500 years ago.

At this remote period of our earth's history the Chinese were acquainted with the power possessed by lodestone of attracting particles of iron. Whether they knew of attraction and repulsion we cannot tell, and nothing is recorded of any further knowledge of magnetism or electricity until some 2,000 years later, or 580 B. C., when Thales, of Miletus, the founder of the Ionic philosophy, discovered that amber (electron), when rubbed, possessed the power of attracting particles of decayed leaves, pieces of straw, etc. Thales believed that amber was an animate body, and in fact regarded the world as a living being and that everything was derived from water.

Again another period of over 2,000 years elapsed without any important fact being recorded, when in A. D. 1576 Robert Norman discovered that when a nicely poised needle was magnetized the north end became apparently heavier, and the south pole had to be weighted to give again a true balance, hence the inclination of the magnetic needle was discovered by Norman. Some twenty-four years later, in A. D. 1600, Dr. Gilbert, of Colchester, wrote a small work in which he describes some new experiments, proving that other bodies besides amber had similar properties under like conditions. Among such substances he enumerates glass, resin, spars, gems, stones, sulphur, etc., and he first gave the terms North and South pole; also a theory accounting for terrestial magnetism. Although Dr. Gilbert's work was received with enthusiasm three-fourths of a century had nearly elapsed before anything worth recording took place, when in 1672 Otto Guericks announced his discovery of a machine consisting of a ball of sulphur, which, when rubbed by the hand, produced sparks of electricity. Three years later, in 1675, Sir Isaac Newton found that a glass globe was pre-

ferable to a ball of sulphur, and Sir Isaac also found that by rubbing a flat glass held a short distance above the table small bodies on the table were lifted towards it.

The 17th century closed without any further discovery being reported, and in 1729 Stephen Grey, a pensioner at the Charter-house, after numerous experiments, found that bodies were either conductors or non-conductors of electricity, and he conducted a current through wet string, the first experiment, leading on to the establishing of telegraphs throughout the world. Four years later, in 1733, Dufay discovered that conductors were non-electrics, and that non-conductors were electrics. He also distinguished between positive and negative electricity.

For several years after this period attention was directed to the perfecting of the frictional electric machine, the most important addition being, in 1740, the prime conductor, by Boze, of Wittenberg, and the fixed rubber, by Winkler, of Leipsic. Just after this, in 1746, Muschenbrock and his pupil Cunens, of Leyden, were endeavoring to electrify a flask of water which Cunens held in one hand, while a chain from the machine dipped into the water. After the machine had been turned some time Cunens, in the act of removing the chain, received a severe shock. This was the origin of the Leyden jar, and, as it was the first experiment proving that electricity could be stored, it will rank as the forerunner of all storage apparatus.

One of the greatest discoveries about this time was that in 1749 of Franklin, by which he obtained a parallel between lightning and electricity. After a considerable number of experiments with a large battery of Leyden jars he, in June, 1752, during a storm, flew a kite having metallic points ; with this, and a key attached to the lower end of the pack-thread, and from this a silk cord attached to a tree, he obtained a considerable number of sparks ; not until, however, the rain had saturated the thread. From these experiments Franklin invented the lightning conductor.

From Philadelphia we must travel to Pavia, where, in 1775, Volta invented the electrophorus. In 1782 he made the condenser and in 1799 he made his famous voltaic pile. While Volta was at work in experiments in frictional electricity, at the neighboring town of Bologna Galvani was making equally important experiments, but in an opposite direction. Thus, in 1780, Galvani discovered the contraction in a frog's leg when the crural nerve was connected to a metallic support and the electrical machine worked. At every spark he found a consequent contraction of the leg. In 1786 he obtained the same effect by the contact of two dissimilar metals, and after a great number of experiments, in 1791, he published a complete account of them, which led to a considerable amount of correspondence between Galvani and Volta. But the first to explain the true cause of the action in 1792 was Fabroni, of Florence, who enunciated the theory that chemical action was the sole cause. This theory was further confirmed in 1800-7, by Davy, who immediately had made a large number of cells, some 2,000 in all. A full and

most interesting account of these cells, and the then remarkable experiments and researches made with them, may be found in the "Bakerian Lecturer" of November 20, 1806, and November 19, 1807. In the latter one Davy foreshadows his discovery in 1809 of the electric light, which he obtained from two pencils of charcoal, each one inch long and one-sixteenth inch in diameter. The spark obtained when the points touched was increased to an arc four inches in length by the separation of the carbon points. Afterwards an arc of seven inches was obtained in an exhausted receiver, and so intense was the heat that, Davy tells us, not only were the charcoal points consumed but also the platinum wire to which they were attached was melted and fell down in large globules.

Since that time only seventy years have elapsed, and it will be quite impossible to chronicle one-tenth of the discoveries and inventions made in this period of time. A discovery of the utmost importance was made in the latter part of the year 1819 by Oersted, the then Secretary of the Royal Society of Copenhagen. He had, in 1813, published a work in which he hinted at a connection between magnetism and electricity, but it was six years later when he made the important discovery that a current of electricity passing through a wire over a magnetic needle caused the needle to deflect. The announcement of this experiment excited the greatest interest among all the philosophers of Europe, and in 1820 Arago invented the electro-magnet. Schweigger, of Halle, also invented the galvanometer. which Ampère first exhibited at a meeting of the Royal Academy of Science, and in the following year, 1821, Faraday discovered electro-magnetic rotation. The most important of the great discoveries of the noble Faraday was that in 1831, when he obtained electricity from the inductive action of terrestial magnetism. In the year following, 1832, Pixii made the first magneto-electric machine, which was improved and added to in 1833 by Sexton, of Philadelphia, who made the bobbins to rotate in place of the rotating magnet of Pixii. The next important improvement was made by Siemens in 1854, in which he wound the wires of the armature longitudinally instead of transversely, as in the old machine. The first time the electric light was used in a public manner was in 1836, when it was used to illustrate the rising sun in "Le Prophet," at the opera in Paris.

My first knowledge of electricity being applied to dentistry was in 1859, when considerable interest was awakened in the profession in its application to the extraction of teeth. Many claimed that the painless extraction of a tooth could be accomplished by passing a current through the tooth at the time of its removal. I cannot do better than to describe the apparatus of one of the advocates of this method. "This apparatus consisted of an electro-magnetic machine with a metallic rod at the end of each cord, the rod at the positive pole to be connected by means of a steel hook; second, an extensor, which is a piece of flexible conducting cord about a foot long, with a metal loop at each end, one very small; third, a conductor, which is composed of a gutta-percha tube eight inches in length, and a

piece of copper wire with a small piece of sponge at one end, the wire to pass through the tube and turn into a loop at the other end, drawing the sponge close up to the tube. The battery should be placed conveniently in rear of the chair. The mode of operating is as follows: Extracting a tooth, set the battery in action, place a rod in each hand of the patient, and pass the piston into the helix until the muscles of the wrists begin to contract slightly; note the position of the piston and withdraw it; take a piece of spool thread and pass it through the small loop of the extensor, and tie it into a loop, full large enough to pass over the tooth; cut off the ends, dip the loop into water, and slip it over the tooth, twist the cord until the thread is close to the tooth; take the rod of the positive pole from the patient, let him grasp the other (negative) in both hands, unhook the positive rod and connect with the extensor; the forceps may now be placed in position, and the current introduced by passing the piston slowly into the helix; if the patient winces the least, let the piston remain stationary a few seconds, then pass it still further, slowly and carefully, until the measure is obtained, that was passed through the hands, or is so strong as to border on the disagreeable. The tooth may then be removed deliberately, the slower the better." My own experience was that in a great many cases the shock was more painful than the extraction of the tooth.

The first really practical application of electricity to dentistry was the Bonwill electric mallet, invented by Dr. W. G. A. Bonwill of Philadelphia, February 27, 1867. It was improved upon until 1876, and placed in its present practical shape in 1879. The first three forms had the stroke governed by clock-work ratchet, which would run an hour. Since 1871-72, the automatic brake has been upon the instrument, and has been made very compact. The first electrie mallet weighed one pound, and had to be suspended from the ceiling; the last one weighs but five and one-half ounces, and is used in the hand with perfect facility. Of this mallet the report of the "International Electric Exhibition, Section XXIV, Electro-dendal apparatus," says: "This section finds presented for its examination, first The Bonwill Electro-Magnetic Mallet. * * * * The Bonwill Electro-Magnetic Mallet, under the title of 'Historical Exhibit of the Electro-Magnetic Mallet, and the dental and surgical engines, by Dr. W. G. A. Bonwill of Philadelphia, Pa.' We have a most interesting series of ingenious inventions, indicating gradual advances towards a desired end. It seems to us, that to do them and the inventor justice would require more space than is at our command, but we equally feel that from the electro-historical standpoint, it behooves us to state the claims made to the section by the exhibitor. There were, first, that he is the original inventor of the first practical Electro-Magnetic Mallet for the filling of human teeth with gold, *automatically* by power; second, that he is the only one who has placed upon the same any improvements of any value up to the present time."

The transmission of power by electricity through a wire offering but a limited resistance has already been successfully accomplished.

Since a dynamo-electric generator may serve also as an efficient electro-motor the invention of a thoroughly successful generator of electricity from mechanical power solved the problem of the recovery of a large per cent. of this power from the electric current at a more or less remote distance. To the electric motor, therefore, we must look for the utilization of this power. In cities and towns where the electric light is used the motor is a power that can be used to great advantage. Its great value consists, First, from its portability, seeing that it need only be connected by means of a pair of thin flexible wires with the main supply cable. Second, from their small weight per horse power developed by them. Third, from the possibility of their being used at a considerable distance from the prime mover. Fourth, from their working to the best advantage when run at a high rate of speed, and so being especially suitable for driving quick moving machinery direct, without any intermediate gearing. But to those of us who cannot make use of the electric cable the battery is the next generator of the electric current that can be made serviceable to us. But the subject of batteries is one so broad and far-reaching that I do not propose to go into any description of them. It is sufficient to say that we have before us several of the new and most approved styles that have been placed on the market. I am not prepared to say which is best, as each one has its good points, and the most singular part of it is that this subtle fluid can be generated from so many different elements, combined in such a quantity of ways, each producing the same effect, varying only in quantity. In regard to motors, the "Griscom" is the only one that has been especially adapted to use in the dental profession, but others are coming forward seeking recognition at our hands, among them I will mention the "Diehl" motor, which I have had much pleasure in watching from its conception, until now it claims a place among the things most needed in the dental office.

To say that a good motor adapted to our use would be received with pleasure, is putting it mild. When, by a touch of the key, our engine is driven at a speed of from two to four thousand revolutions a minute; then again, when we have the apparatus, another turn of the key and the electric light breaks forth with the brilliancy of a minature sun, enabling us to examine the mouth and teeth in a manner never conceived of before. Still another move of the key and the invisible fan is set in motion, cooling our overheated brains and making the patient feel that their comfort is studied as well as our own.

I predict in the near future great results in the field of electricity as applied to our profession, so great, indeed, that were I to put on paper what I believe will be accomplished, I should be called visionary in the extreme. I trust that you will give the different appliances exhibited a fair and full examination, for I take great pleasure in saying that never before has so fine an exhibition of dental appliances been made at any dental society.

Dr. W. G. A. Bonwill—Inasmuch as this subject has been brought up to-day, of the history of electricity in dentistry, I think Dr. Brown could have done more justice to himself as well as to his profession. While he has probably given me a great deal more credit than I deserve, at the same time, inasmuch as he is making, or recording history, I think it would be well to do it accurately and minutely. So far as the introduction of the electric mallet is concerned I think he could have done further justice by stating a few facts. From the first conception of that mallet to the present moment no one else, notwithstanding the many trials by many men in and out of dentistry, has ever made a single improvement upon it. I think the credit belongs to me, if there is any credit in the instrument, and it is due to the dental profession that they should know the whole facts of its history. I am sorry that the gentleman did not give you the full text of the report of the committee of the Electrical Exhibition of the Franklin Institute last fall. Dr. Brown wrote to me about this matter, and I sent him the report, which I find he has not given in his paper. I would like to have him give that entire and to have the Society publish it in justice to me, inasmuch as he has given a part of it.

After I had made this invention it was ruthlessly taken from me. I went on making improvements from time to time without troubling myself about that. What I have done in the way of invention has been done not with money, but simply with brains. It was brains versus money. It has been conceded that this invention belongs to me, not only in its conception but in its perfection, and that no other name should be connected with it. A contract was made to that effect by the trustees of the late Dr. Samuel S. White, and was published in the Cosmos, June, 1880, but it was not faithfully carried out. Dr. Webb never had anything to do with the mallet in making a single practical improvement. This fact I proved conclusively to the trustees by Dr. Webb's letter to me, as well as by the models I made from time to time. During the electrical exhibition the chairman of the committee, Dr. J. Foster Flagg, came to me and asked the facts about it. I told him to go to the S. S. White Company and find out the facts and publish them, irrespective of anyone. He went, and they said to him, "Give to Dr. Bonwill the credit of the whole thing." I would like to suggest that the full report of that committee be set forth in order that I may be vindicated in my claim; for, while many have attempted it, nobody has done anything in the way of improvement of my mallet. It is now as a fact admitted that not a single improvement has been made upon it of any value whatever. A retrograde change has taken place, and I would not claim the instrument as it stands to-day, for I do not consider it perfect. The change that has been made destroys the power of the instrument. One great reason why I introduced it into dental work was not only to save time, but to give less trouble to the operator and less pain to the patient than any other instrument; and I consider that it accomplished all that. It does not accomplish it to-day. As the

electric mallet is now it takes too long to fill a tooth. It is a good instrument for some purposes. Of the numbers of people who made use of the electric mallet and electric motors how few there are to-day to tell the tale. This American motor shown here by Dr. Brown has fallen by the wayside. Others are coming in their place. We use machinery in order to do the most work in the quickest time and with the least expense to the patient, and the electric mallet to-day is not doing its duty in that respect. Therefore, in justice to me and to the profession, I ask that Dr. Brown shall embody in his article the whole of that report made by the electrical committee, which I sent to him, and that it may appear in the proceedings of this Society.

Dr. Hayhurst—This seems to come somewhat in the line of the paper that I read this morning. It is a step in advance and will result, I have no doubt, in good to the profession in enabling them to do work that they could not do without it. There is a wide field open; we are in the midst of a struggle for light, and although electricity is a source of light in itself, yet we want light to enable us to work properly with it. The history which Dr. Brown has given of the development of electricity is interesting in itself, but it is necessary to understand something of the principles before we can understand the operation of the machinery. From the simple experiments that I remember seeing in my school days we have gone forward in the line of experiment with the principle of electricity and have adapted it to various uses, and we will go on adapting and improving until we come to what we conceive to be perfection in this kind of machinery. As to the publication of that report from the electrical commission, I presume that is a matter between Dr. Bonwill and Dr. Brown. If there is any justice that can be done to a person whom we know has labored with his brain and his money to such an extent that he has felt the want of one of them at least—money—as I understand, I think it is right that it should be done.

Dr. Brown—I left it out because it had been published in the Cosmos and was, I supposed, familiar to all. You mean the additional report from that committee?

Dr. Bonwill—I mean the report that was originally given to the committee.

Dr. Brown—The reason I did not do it was that it did not apply to the electric mallet, but to your other appliances, which I did not have anything to do with.

Dr. Bonwill—It does apply.

Dr. Brown—Any portion of it that applies to the electric mallet I will cheerfully embody in the paper.

Dr. Hayhurst—If there is an attempt to do justice I think we ought to do the whole justice, and if it is not out of order I would recommend that it be done.

Dr. Brown—This motor was originally intended and gotten up for driving sewing machines. The inventor, P. Diehl, is an assistant superintendent for the Singer Sewing Machine Company, work-

ing in the city of Elizabeth. I saw it in Philadelphia, became interested in it and, being a resident of Elizabeth, I made his acquaintance, and I suggested the propriety of adapting it to the wants of our profession. He has been working at it from last fall up to the present time, and this motor was only completed the day before I came to this convention. This is really the first motor that has been produced and arranged for our profession. It has been reduced in speed and increased in power and adapted to our requirements, and will be further changed if necessary. This lever here is simply to reduce the speed. It does not reduce the power of the current at all, and does not lessen the consumption of the battery; it simply reduces the speed by throwing the Field magnets further apart. I do not claim that it is perfect. As Dr. Hayhurst has alluded in his paper to a report that he had noticed in regard to the Backus water motor, I feel a little flattered that this should come up at the same time I introduce this, for the first introduction of the Backus water motor to the dental profession was at my office, in the town of Mount Holly, in 1875. Although in crude shape at that time it was afterwards perfected and is now a success; and the Backus water motor has become a favorite with a great many members of the profession all over the country, wherever water power can be obtained. My friend, Dr. Eaton here, I do not suppose would be without his water motor for any consideration. But there are a great many of us who cannot use a water motor, and we have to look for some other power. We want something that is not too expensive, that is not dangerous, that does not require too much attention, and that will do the work we require. When this motor came to my notice I became interested in it, and have pushed it along until I am able to present it in the form in which you see it. I do not claim perfection for it, but only that it is a step in the right direction, and it is possible that some good may come of it. I hope we may get some motive power that will obviate the necessity of our running a tread-mill from early morn to dewy eve.

Dr. Stockton—Mr. President, I move you, sir, that this Society invite the National Dental Association to hold its session of 1886 at Asbury Park. Carried.

Adjourned until 10 o'clock.

FRIDAY MORNING

The President, Dr. J. W. Scarborough in the chair.

The roll was called by the Secretary.

Dr. Levy read the report of the Committee on the President's Address. On motion of Dr. Carleton Brown the report was received and the committee discharged. On motion of Dr. Carleton Brown the report was adopted.

Dr. Richards, of the Executive Committee, reported Cape May, Atlantic City and Asbury Park as suitable places for holding the next annual meeting.

The Secretary read the provisions of the By-Laws regarding the the selection of a place for holding the annual meeting. Asbury Park was selected.

On motion of Dr. Geo. C. Brown the convention proceeded to the election of officers.

For President Dr. Meloney nominated Dr. W. P. Richards, and Dr. Barlow nominated Dr. Worthington Pinney. Dr. Richards declined the nomination. On motion of Dr. G. Carleton Brown the Secretary was directed to cast the ballot for Dr. Pinney, the only nominee. The President appointed Dr. Carleton Brown and Dr. Guihon tellers. Dr. Worthington Pinney was declared elected President of the Society for the ensuing year.

For Vice-President Dr. Palmer nominated Dr. A. R. Eaton. A motion that the Secretary cast the ballot for Dr. Eaton was carried. Dr. A. R. Eaton was declared elected Vice-President.

For Secretary Dr. Charles A. Meeker was nominated. A motion that the President cast the ballot for Dr. Meeker prevailed and Dr. Meeker was declared duly elected Secretary for the ensuing year.

Dr. George C. Brown was nominated for Treasurer. A motion that the Secretary cast the ballot in favor of Dr. Brown for Treasurer was carried. Dr. George C. Brown was declared unanimously elected Treasurer.

Dr. G. Carleton Brown nominated the old Board of Examiners as a whole for re-election. A motion that the Secretary cast the ballot in their favor prevailed, and Drs. C. W. Meloney, J. Hayhurst, James G. Palmer, Frederick C. Barlow and Frederick A. Levy were declared elected a Board of Examiners for the ensuing year.

For Executive Committee, a ballot being taken Drs. B. F. Luckey, G. E. Adams, G. Carleton Brown and W. P. Richards were declared elected by the following vote: Luckey 22, Adams 21, Brown 20, Richards 20.

After some discussion the matter of appointing delegates to sister societies was left to the discretion of the Secretary, with the power heretofore conferred upon him.

Dr. Levy—Last year the Society instructed its delegates to the American Dental Association to present a petition to that Association, and I would like to report upon that in behalf of the delegates who attended. The petition was in behalf of Dr. S. Chalfant, who killed Josiah Bacon, that it was laid on the table.

Dr. Levy read a communication from Dr. G. H. Cushing, Secretary of the American Dental Association, relative to the above matter.

A motion to accept Dr. Levy's report was carried.

Votes of thanks to the retiring officers for their efficient service, to Mrs. Coleman for courtesies extended to the Society, to the exhibitors for their attendance, and to stenographer Craig for his many years' attendance, etc., were passed.

A vote of thanks to Dr. Eaton, Dr. Parr and Dr. Spyer was passed.

Dr. Bonwill was invited to read an essay on his method of articulating artificial dentures.

DR. W. G. A. BONWILL—Gentlemen, I did not come here to say anything upon any subject, but if I can serve you in any way I shall be glad to do so.

I do not think there is anything that has given me more pleasure and satisfaction in my profession than the subject of the articulation of artificial dentures, and I consider there is no one thing of greater importance to-day, outside of operative dentistry. I have gone further, and said that I did not consider a man has any business in this department of the dental profession unless he understands the principles and the law underlying this operation. There is not a gentleman in the dental profession who knows scientifically how to articulate a set of teeth. I say it with all due regard to those present and to the dental profession at large. I know it. No man who has ever seen an articulation which I have made, and heard me explain the law, but has so decided at once. You see a great many sets of teeth that look very nicely, and it is possible to attain a considerable degree of excellence so far as the artistic effect and pleasant appearance produced are concerned, but when you come to apply the force of the jaws in using those teeth their weakness and defects are soon apparent. And unless you absolutely know the law by which it is done it is impossible to make the surfaces articulate exactly as nature intended they should, and as is necessary for good service.

I have said very little about this thing for 26 long years, because when I first applied the principle I was engaged in perfecting an instrument that was never brought out or put on the market after it was given to the manufacturer to make, and I became disgusted with my experience in that and so let this articulation idea go. Not only that, but I found that I would have to explain it personally to every dentist before he could use it successfully, which was impossible for me to do, as my time was too much employed in other directions. I showed this thing to some of my friends over 26 years ago, and during all that time, until four years ago, I have never been asked to read a paper upon the subject, notwithstanding many dentists in my own city knew of it, hence I did not take the interest in it that I otherwise would.

Shortly after I first went into dentistry I had occasion to articulate a full set. I found there was no articulator upon the market, only plaster forms were used. At that time I made a little wire articulator, very nearly like that which you will see outlined in *Harris' Dental Practice*, and that I used when I first began. I made a set of teeth for a patient in Washington, and after I had taken the impression, fitted my plates and got my bite, I wanted something better than just merely a plaster articulator, and the idea struck me that I would use this little wire articulator. I did so, and before I got through with that set of teeth the conception of the articulator, which I at once made and have used for 26 years, struck me at once. Unless I see the law underlying a thing I am not sat-

isfied. I measured the human jaw to see what was the average size of it, and I found that the distance from the centre to centre of each condyloid process was about four inches. I found another thing which is remarkable, and which you will not see mentioned anywhere, that it is exactly four inches from the centre of the condyloid process to the centre line of the lower jaw at the cutting edge of the central incisors. This is a rule that will hold good throughout, and you have, as the result, an equilateral triangle. An eighth or fourth of an inch difference in the radius of four inches in the arc of a circle don't amount to anything. I found that to be a law, and tried to see why it should be a law. When you put the plaster cast in your ordinary articulator you are not particular whether it is three inches or four inches from the base of the jaws, because you have no law to guide you. I wanted to find the law and I did it. What is the natural type of a mouth so far as the articulation of the teeth is concerned? Does nature make, in the first instance, the incisors come directly in contact with each other? I say no. Why? No mechanic would dare do such a thing in making a similar cutting instrument. I knew God himself would not dare to, because it would be folly. I knew there must be a slight over-bite; if not they would be so dull in a little while that they would not be incisors at all. Therefore I say the normal type of mouth must be that in which the teeth slightly over-set each other.

Then I arrived at another fact. If you do as the majority of men do, articulate teeth by making them come in direct contact, then there are two lines running directly back parallel with each other. What would be the use of nature making cusps in that case? They would soon wear off. Why did nature make those cusps? Nature allows the cusps to be just so long, and in making those cusps of a certain length nature knew what she was about. They correspond to the depth of the over-bite.

When I commence to make my articulation in front and I make my over-bite one-eighth of an inch, I know what depth to make the cusps. There is no guess-work about it. As I proceed, if I have one-eighth of an inch over-bite, I have two lines running back from the centrals to the condyloid joints, and as they go further back they come to a point where they converge, and as you go back the cusps become less deep. It would be of no use to have them as long back there as in front, because they would strike these molars and not strike upon the incisor teeth at all.

I found it was necessary for my articulator to embody that movement. Then I found that as I moved my articulator from side to side laterally it indicated how long my cusps should be. If they did not strike in front I knew my cusps were too long at the bicuspids, and I cut them down until the teeth strike here.

When I get back to the first molar, unless there is now a gradual curvature towards the condiles upward, I could not make any of the molars articulate at all. With the curve at the ramus I have equilibrium in every portion. After making the over-bite one-

eighth of an inch, if you let these straight lines run directly back, no one of these teeth would be of any use to you. They would be thrown out of position to make these meet. By throwing my lower jaw to the right I find my second molar touching here on the outer cusps, here on the inner, and here in front; thus equalizing from three points every portion. I found that there resulted just what I had never before seen a set of teeth do, *i. e.*, all the inner cusps touch. There is no other way by which you can make the inner cusps touch. Dr. Starr says yes. I ask him to prove it. He cannot do it. Dr. Starr tried to bring out an articulator to upset mine, but, not understanding the underlying principles, it was all naught.

I proved that there is underlying this thing a geometrical and mathematical law; and when I came to join to that this mechanical law that a certain depth of over-bite requires a corresponding depth of cusp, and a certain curvature of the jaw at the ramus, and take into consideration this lateral movement, I had solved the problem of how to properly articulate a set of teeth.

Therefore, after twenty-six long years, I have not found one reason to remodel that articulator. It is as clearly worked out as a mathematical problem, and it has been of immense satisfaction to me in my own office. It has developed a good many other points which I will not enter upon. I feel quite sure that in the establishing of this law which I speak of as absolute, I can prove some points that have never before been brought before the scientific public, and which tend to upset that principle of Darwinism which assumes that we are developed from lower animals.

This articulator will be of no use to dentists unless they can hear the explanation of the principles and have it demonstrated at the time. If the article I spoke of is ever published by any of the journals it will do something toward it.

There was brought out an anatomical articulator by the late Dr. S. S. White, and I think it was patented by Dr. Starr, after I had unreservedly given this thing to the profession. If the gentlemen had only known the law that underlies this thing he never would have done it. Instead of making his articulator four inches from condyle to condyle, he made it two and a half inches, showing that he did not know the law. Ignorance gives a man a great many falls. Had that articulator of mine been brought out as it should have been by Dr. S. S. White you would have had something that would have pleased you more than any other one thing in the mechanical department. To him I can attribute the failure of that instrument. Now my mind has come back to it and I shall develop it to the fullest extent. What I gave to the profession years ago they shall have again. If I could have had the relationship that should exist between dentists and their co-laborers, the manufacturers, I never would have abandoned this instrument, but I was compelled to do what I have, and you have missed one of the best things I ever devised and perfected.

Some time in the future, perhaps next year, when it is convenient for me and pleasant for you, I may articulate a set of teeth before

you and will show you how it is done, and further explain the law which underlies it.

DR. EATON—Can you articulate blocks in that way?

DR. BONWILL—Anything. It makes no difference what. When I articulate blocks I do not allow their beautiful surface to remain; I cut them all to pieces. I never found blocks that I could articulate as they are made. The manufacturers could do a great deal better, but the trouble is they won't hear anybody; they think nobody knows anything but themselves. I do know about that one thing, because I have proved it. I will sometime in the future articulate a piece in public, for I do feel that if it is due to nobody else, it is a duty I owe to the profession to let them know about this.

A motion of DR. MELONEY that Dr. Bonwill be invited to give a clinic before the Society at the next annual meeting, and exhibit upper and lower models of his articulator, was carried.

DR. BONWILL stated that some during the coming winter would suit him better for giving the proposed clinic, and the Central Dental Association was suggested.

On motion the subject was passed.

A motion to proceed to install the officers-elect was carried.

DR. WORTHINGTON PINNEY, the President-elect, on being conducted to the chair, said: Gentlemen. I thank you very much for the generous manner and the unanimity with which you have conferred this honor upon me. I will try to preside over your deliberations with fairness and to the best of my ability, and I trust you will all give me your aid in promoting the usefulness of our Society.

Vice-President Eaton, Secretary Meeker and Treasurer Brown were duly installed, making brief and appropriate acknowledgments.

The Prosecutor reported as follows: One man by the name of David Owitz, of Newark, was complained of last year. I went before the Grand Jury twice in his case; the first time it was laid over, but the second time he was indicted. He is now under $500 bail. There has been such a large calendar of criminal business in Essex County that this case has not been reached. I understand from counsel that we have one of the clearest cases against this man that we have ever had. He has pleaded guilty before the Justice where I made the original complaint; he said he practiced dentistry, not knowing there was any law in the matter. He was indicted by the Grand Jury and I expect the case will come to trial at the September term of the Court.

After some music by the band, the Convention adjourned.

PROCEEDINGS

OF THE

NEW JERSEY STATE DENTAL SOCIETY.

SIXTEENTH ANNUAL SESSION.

ASBURY PARK, July 21st, 1886.

The meeting was called to order by the President, DR. WORTHINGTON PINNEY.

The Secretary called the roll, and the minutes of last annual meeting were read and approved.

The following proposals for membership were received: H. A. Benedict, D. D. S., of Jersey City—sponsors, Drs. W. E. Mitchell and S. S. Hawley; I. G. Burton, of Asbury Park—sponsors, Drs. C. A. Meeker and A. S. Burton.

DR. EATON, Chairman of the Executive Committee, reported that the Committee had investigated the charges that had been preferred against Dr. J. Chadsey, of Newark, for having violated the code of ethics in the matter of advertising. The Committee would recommend the expulsion of Dr. Chadsey from the Society.

On motion of DR. LEVY the report of the Executive Committee was received.

DR. MEEKER, of the Special Committee on obtaining hall and accommodations, reported as follows: The Committee visited all the hotels and were offered the best terms and accommodations at this house by Mrs. Coleman.

The report of the Special Committee was accepted.

DR. LUCKEY moved that Dr. J. Chadsey be expelled from the Society. Motion carried.

The President read his annual address. On motion of Dr. Carleton Brown referred to committee of Dr. A. R. Eaton, Dr. W. P. Richards and Dr. G. E. Adams.

THE PRESIDENT'S ANNUAL ADDRESS.

GENTLEMEN OF THE NEW JERSEY STATE DENTAL SOCIETY—We are gathered together for the sixteenth annual meeting of our Society, and I trust it will prove as pleasant and profitable as the many that have gone before. I think we can congratulate ourselves that we are permitted to spend these few days of each year in social intercourse with one another. With no care or business to distract us, but with our minds free and clear to pick up the bright thoughts, new ideas and witty sayings of those we meet here. We welcome the many members of the profession who have come such long distances to meet with us, and cordially invite them to take part in our deliberations. We thank our honorary members who have so cheerfully given their services to help make our meeting more interesting and valuable. I would call attention to the increased number of clinics and the prominent dentists taking charge of them. Also our good fortune in having with us Dr. Herbst, of Bremen, who will show us some new methods from Germany. I would also call attention to the large display of dental appliances and other goods exhibited here.

Our ranks have been broken since last we met, for two of our number have passed away. Dr. Cosad, who was one of the oldest members and also one of the early Presidents of this Society, and who, although old in years and feeble in health, still kept up his interest in our work and success. We will miss his strong mind and dignified bearing at our gatherings. And Dr. Pierce, with his gentle and kindly face, who we each always felt was our own personal friend, will long be remembered by the members of this Society. I would recommend that some action be taken by the Society with regard to their death.

Our Society is steadily increasing in membership and influence, and I think we can recognize the valuable services of the central or local Society as a help to keep up the interest in this Society. In looking over the work done by this Society since its organization I think we can congratulate ourselves that our work has not been in vain, for the cause of dentistry has been advanced.

Our last dental law has had a good effect in the State, for incompetent men are not allowed to commence practice here, and the standard is gradually getting higher. I would suggest that all members take notice of any new dentists commencing practice in the State and at once notify the Prosecutor. I also wish to call attention to the frequent breaking of the code of ethics by members advertising as they do. I would call attention to the folly of many good dentists cutting down the prices of their work because some one else does so. I would recommend that we all try to keep the standard of prices so high as to enable us to do the best work and make it profitable to us.

The American Dental Association will hold its next annual meeting at Niagara Falls, on August 3d, and I think as many should go from this State as can make it convenient to do so. And now, gen-

tlemen, I thank you for the honor you have conferred on me, and hope you will overlook any errors I may make as your presiding officer; and request your close attendance at the sessions, so that we may advance the business as fast as possible.

DR. WILLIAM CARR, of New York, read a paper on

MODIFIED INTERDENTAL SPLINTS.

In presenting this paper for your consideration it is not my object to give an elaborate treatise upon fractures of the inferior maxilla, as this is ably and exhaustively done both by Prof. Garretson, in his work on *Oral Surgery*, and by Dr. Kingsley, in his work on *Oral Deformities;* but to bring to your notice and briefly describe an improved interdental splint. From my own observation and experience I find that this splint, as improved or modified by Dr. D. A. Williams, "Demonstrator of Prosthetic Dentistry" in the New York College of Dentistry, meets all the requirements of the more complicated appliances heretofore used.

You are aware that there are, by far, more fractures of the inferior maxilla than of any other bone of the face, resulting from blows or kicks received while fighting, or from the kick of a horse. The fractures are usually either simple or compound, while the lesions resulting from a fall upon the face from scaffoldings or other elevations are usually comminuted, consequently they are of a more serious nature.

Blows causing fractures are usually received upon the body of the jaw between the canine and the molar teeth. This may be explained as follows: When a person sees that a blow is directed toward his face he naturally, either to evade it or to protect his eyes, throws his head laterally and backward, thus elevating his chin, and the blow is received directly upon the body of the jaw. A peculiar feature of these cases is that the practitioner is rarely called upon for treatment until a day or two after the occurrence. The victim realizes that some of his teeth are loosened, also that he is painfully

bruised, but he is entirely unconscious of the fracture, and not until he becomes alarmed at the increased inflammatory condition does he seek surgical relief. The practitioner will have no difficulty in establishing a correct diagnosis. The following symptoms are present: great pain in the effort to open and close the mouth, swelling, crepitus, inflammation, inability to masticate and marked irregularity of the teeth, which is due to the fact that the anterior portion of the fracture is drawn downward by the depressors of the inferior maxilla, while the posterior portion remains fixed by the temporal muscle. The treatment is the same as for other fractures, viz.: to bring the parts into apposition and to retain them there until firmly united. Since the introduction of the interdental splint, the treatment of this class of fracture has been relegated almost entirely to the hands of the dental surgeon.

By means of this splint speedy union is secured without deformity or irregularity of the teeth. Before taking the impression a careful examination of the parts should be made by passing the finger along the margin of the jaw, and the parts should then be brought as nearly as possible to their normal position. If any of the teeth are loosened they should be removed immediately, as their retention might possibly interfere with union. The impression should be taken in an ordinary lower partial impression cup, avoiding the use of too much compound, as only an impression of the teeth is required. For this purpose use Hood and Reynold's No. 2 impression compound, as warm as the patient can bear it, in order to prevent unnecessary pain, and also to prevent further displacement of the parts, allowing the compound to remain until very hard, so that the impression will not drag but will be sharp. Then take an impression of the upper jaw in the usual manner. In making models mix with the plaster sulphate of potash or salt to give solidity. Saw the cast at the point of fracture and articulate with the cast of the upper jaw, unite them with a few drops of melted wax and immerse the cast of the lower jaw in water, keeping it immersed until thoroughly saturated. Then reunite the two parts previously sawed by filling the space with thin plaster. When this has hardened secure both casts in an articulator. Before waxing trim the necks of the molars and bicuspids of both casts. This trimming is necessary in order to secure a tightly-fitting splint, as an impression rarely takes the undercuts of the teeth. Separate the casts by means of the screw at the back of the articulator, leaving a space of about three lines between the incisors; this will leave sufficient space for the patient to receive nourishment; place a strip of ordinary sheet wax over the teeth of the lower cast, extending it to the free margin of the gum. Also wax in the same manner the teeth of the upper cast as far forward as the canines; next place a roll of soft wax on the grinding surface of the molars and bicuspids and bring the articulator firmly together; remove the excess of wax and smooth; then remove from the articulator and proceed to invest as for an ordinary vulcanite case, taking extra precautions that the casts are thoroughly saturated with water to prevent the formation

of bubbles while flasking. After removing the wax paint the teeth with collodion or liquid silex, and pack, having the rubber as soft as possible. Vulcanize for two hours at a temperature ranging from 280 to 300 in order to secure an elastic splint. Before adjusting the splint the depression for the molars should be deepened about one line; drill a small hole on the buccal surface of the splint over the grinding surface of each molar, for the purpose of ascertaining whether after adjustment the teeth are in proper position; adjust the splint first to the upper jaw, then gently bring the lower jaw with the fractured portion into position until it has passed about two-thirds the length of the teeth, then, with a quick, firm motion, bring the parts into place. This last motion will be a painful operation to the patient, but it will soon be forgotten. Next apply the four-tailed bandage, which should be retained from three to five days, after which, in the majority of cases, it may with safety be removed. After the splint has been adjusted and the bandage applied the patient immediately experiences great relief and suffers no material inconvenience from the fracture, and he may after the third or fourth day pursue his ordinary vocation or take his accustomed exercise. He should be furnished with an ordinary rubber syringe and instructed to keep the mouth thoroughly cleansed. I find that for this purpose the per oxide of hydrogen, or a solution of bi-sulphate of soda, in the proportion of a drachm to the ounce is, in most cases, all that is required. In ordinary cases the splint should be retained from three to four weeks, according to the physical condition of the patient. Unless unforseen complications should arise the application of the splint, combined with thorough cleanliness of the mouth will, in most cases, be all the treatment required.

Dr. Palmer—Mr. President, I should like to hear the remarks of some one who has had experience in matters of this kind.

President Pinney—Gentlemen, I have had some little experience in the treatment of fractures of the jaw, and I would like to ask Dr. Carr if he has noticed that in a large majority of such fractures that result from a blow on the side of the jaw there is a double fracture. I have recently had four or five cases in the hospital in which there was such a double fracture, the jaw being broken above and back of the teeth. Those are the most difficult cases to handle, because after you have your splint attached it seems to be pushed out of place; I have not been able to keep it exactly in the position in which I want. In those cases I have usually, after applying my splint, turned the patient over to the surgeon's care. Where the fracture is so high up it is exceedingly difficult to apply a splint that will hold the fractured parts in place, and I do not know of any bandage that will do it. I have now a case in hand where the jaw has united very nicely, but there is a bad abscess on that side, and there is a little separation between the molars where the fracture was. There is good union of the bone between the cuspid and the bicuspid.

I had a case of fracture that came from a blow under the jaw.

The patient was a laboring man, and while he was at work something struck him here, cutting through to the root of the tongue. In that case I made a plate that was a little different from the one which Dr. Carr has described. The patient had lost two teeth in front and I placed the splint inside of the teeth and tied it with twine to the molars, and the next day he ate meat. In a short time he resumed his work. He wore the splint for six weeks, when the surgeon cut it off. The result was in every way satisfactory. This case that I have in hand now I have not been satisfied with on account of the abscess and on account of the molars on the left side not striking.

DR. CARR—Is there necrosis there?

PRESIDENT PINNEY—I do not know. I did not see the patient until about nine days after he received the blow which caused the fracture. The face was then very much swollen and the jaw had dropped out of place. It was very difficult to get the parts into their proper position. There is a little separation between the bicuspid and the canine, where the fracture was, but not enough to make a bad case of it.

DR. CARR—I think you will find necrosis there. When that necrossed bone comes away there will be an end to the abscess.

PRESIDENT PINNEY—The patient is in hospital. When I saw him last the abscess had not come to a head. I told the surgeon that I would only make a splint for the fracture of the jaw, and that he must treat the one on the side.

DR. CARR—I saw a very interesting case somewhat similar to the one the doctor has described. It was not one of my patients, but a patient of Dr. Williams. In that case the ramus on both sides was fractured. He used in the treatment of that case simply this interdental splint, keeping it thoroughly attached and watching it.

Paper passed.

DR. EATON announced a clinic at two o'clock.

Adjourned to 2 o'clock P. M.

AFTERNOON SESSION.

PRESIDENT PINNEY—Dr. Starr has consented to show us some bridge work that he has been introducing and to give us a description of it.

DR. STARR—I will try to give you a little description of some bridge work, not that I claim for it any especial originality. The principle of bridge work is old, being found in publications as far back as 1805. I have attempted here to get at an easier way of placing crowns upon tooth roots.

DR. STARR read a paper and illustrated his remarks by diagrams on the blackboard and by drawings.*

*Dr. Starr's paper was not given to the Secretary, consequently it is not published.

EVENING SESSION.

DR. HAYHURST, Chairman of the Examining Board, reported favorably upon the names of H. A. Benedict and I. G. Burton. They were duly elected members.

DR. EATON reported that Dr. W. G. A. Bonwill would clinic at 2 o'clock P. M. Thursday.

Dr. J. A. W. Noble was presented as a delegate from the Odontological Society of Pennsylvania.

DR. C. A. TIMME read a paper on "The Properties and Qualities of the Different Makes of Gold Used for Filling Teeth, with a Practical Quantitative Analysis Showing Amounts Present of Foreign Metals."

MR. PRESIDENT AND GENTLEMEN—Our old friend and Secretary of our Society put me down to read a paper before you, but has interred me in such a large scientific field that I am afraid you will be surprised at my still having the courage to beg you to listen. It will take only a few minutes.

GOLD OUR FAVORITE METAL TO FILL TEETH WITH.

So often we hear or read of its good or bad qualities. As far as it comes in our dental branches we are always ready to hear something new if possible. Without question the subject of gold, its properties or preparations, has already been widely discussed, and many worthy papers read, which now take their honored places in the dental literature. Gold, as we all know, is in its pure state the richest, most ductile and malleable of all metals. It has in its compact form and purity a peculiar yellow color, therefore it is named from the Latin word *Aurum*. The specific gravity varies from 19.25 to 19.55, which, through malleting or other mechanical treatment, produces even as high as 20. Its ductility appears to have scarcely a limit. Gold leaf has been beaten down as thin as one-nine thousandth m. m. of thickness. The coating of gold on gilt silver wire is still drawn thinner, say about one-twenty thousandth m. m. or one-two hundred thousandth of an inch in thickness, without losing its color. Gold unites with nearly all metals, but on the other hand even very small quantities of antimony, bismuth or lead impair its malleability to such an extent as to render it unfit for use either for coin or any other purpose, as it becomes brittle. The following metals are affected the same, but to a less extent: arsenic, zinc, nickel, tin, platinum, copper or silver. Gold thus alloyed, even a trace of such mentioned metals will spoil the ductility and malleability of a real 1000 fine gold, the only gold I think fit as a material for filling teeth.

In justice to our first-class operators I will say I believe the impurity of gold makes a failure of the highest degree of workmanship. The great success Dr. Herbst has had with his method is

partly due to Mr. Wolrab, a gold-beater in Bremen, Germany, who, through his talent and energy, advised by Dr. Herbst, succeeded in finding how to produce the soft and most pliable gold we needed in our profession. So, after a long series of experiments, Mr. Wolrab produced the fine article which is in the market now.

Some years ago I read a paper before the Central Dental Association of Northern New Jersey regarding the Herbst method and discovering of the Wolrab gold. Since that time great progress has been made, both in America and Germany. I have often been asked why such soft gold could not be made in this country, we Americans being always ahead in dentistry. A manufacturer told me that undoubtedly Wolrab's gold is a very fine preparation but could not be purer than the foil he made, and presumed the whole secret is that Wolrab muffles his gold and through this probably produces the softness.

A short while ago, when I was in Baltimore, a prominent dentist there, speaking of different preparations, made the remark that he found through his own experiments that gold was alloyed, which was the reason it is scarce at $25 or $26 or less an ounce, wholesale. It would be impossible to produce a one-one thousandth fine gold at such a price, as the expense of refining increases by having to remove the least trace of foreign metal. Through this I got the idea of getting at the bottom of it all, regardless of expense, and had the analysis of six different kinds of gold made by proper authority. I hope by my exertions to stir up all the gold manufacturers, so that they will progress and finally excel. The course of procedure in the examination of the gold samples was as follows: First, fire assay of each sample; second, qualitative analysis of the aqua-regia solution. The fire assay, as is well known, is much to be preferred for determining the amounts of gold in alloy and it is quick and accurate. I herewith give the result of the analyses made by Dr. Stellman, Professor of Chemistry, Stevens Institute, Hoboken:

No. I—Sample of S. S. White. Assayed 999 parts fine.

No. II—Sample of Wm. Valleau, N. Y. Assayed 998.7 fine, containing traces of copper and some alluminum.

No. III—Sample of Ed. Rowan, N. Y. Assayed 999 fine; traces of lead and silver.

No. IV—Sample of E. Kearsing, Brooklyn. Assayed 998.4 fine; small amount of lead was found.

No. V—Sample of R. S. Williams, N. Y. Assayed 999 fine; traces of platinum was found.

No. VI—Sample of Wolrab's. Assayed 999.8 fine; no traces of any other metals present.

In presenting this result of the examination of six different manufacturers' gold I am pleased to state that the purity of nearly all of them exceeded my expectation.

President Pinney—Gentlemen, the paper is before you. All of our guests and members of the profession from other States and

societies are cordially invited to take part in the discussion of the paper.

Dr. Frank Abbott—Mr. President, I do not know that I have anything particular to say, except to congratulate the profession that we have so many kinds of gold that are fit to fill teeth with and that are so near being absolutely pure. It seems that there are no manufacturers hardly who are making gold that is not fit to put into a tooth, or that fails to hold its color. Dr. Timme has given us his tests of a number of varieties of excellent gold, and that number might be multiplied, perhaps, two or three times. I have several kinds of gold manufactured by the S. S. White Manufacturing Co. that are represented as being 999 5-10 pure. How it is possible for gold to be made any finer than that I can hardly conceive. Possibly they may have a better way of refining it in Germany and our manufacturers may learn something from them. Probably the finest we have is 999 5-10, although I have some that is marked 1,000 fine. Analysis will probably show a slight fraction of impurity, but it is so near absolute purity that the difference is hardly worth mentioning. I think it is true that Wolrab succeeded in making a softer gold than had been manufactured in this country before, and the introduction of that soft gold has stirred up our manufacturers to produce a softer and better gold than they had before given us. I think they need stirring up with a long pole once in a while, for they are now making better gold than they have ever made before. It works nicely and perfectly and is, in every sense of the word, as good gold as is manufactured in Germany or anywhere else. I am pleased to know, from actual analysis, that so many of our manufacturers are making gold that is pure and good, and that we can feel assured will stand.

Dr. Watkins—May I ask if Dr. Timme has made an analysis of Williams' electric gold and White's velvet gold, which are placed on the market to compete with Wolrab's gold.

Dr. Timme—No. I selected those six varieties for analysis. I could not carry my experiments further, particularly as they are somewhat expensive. I thought those would do for the present. Possibly at another time I may analyze the other brands.

Mr. M. M. Johnson was invited to speak on the subject.

Mr. M. M. Johnson—Gentlemen, I rise with considerable hesitation to speak before the profession. Having spent a good deal of time in the manufacture of the various preparations of gold I may claim to have some experience in the matter before us. I do not know that I can say anything of interest to you upon it.

Nine hundred and ninety-nine thousandths fine is about half a thousandth finer than the government will give you at the mint all the bars you can pay for. Nine hundred and ninety-nine and one-half thousandths fine can be had in the market. I was speaking with a leading manufacturer of gold foil some time ago, not an educated man but quite a successful one, and asked him whether he refined by the wet or by the dry process. He hesitated a minute. I said, "Do you refine in the crucible?" "Oh, yes; in the cruci-

ble, certainly," he said. From that reply it was evident that he could not produce 1,000 fine gold.

Our government is doing very fine work. The process they use is especially adapted to refining gold in large quantities and gives a very high grade at a very low cost. In the compliment which Dr. Abbott has paid the gold manufacturers the government should be included also. I think that to it belongs the credit for the fineness of many brands of gold foil. If a manufacturer were to get up on this floor and say he refined his gold by the dry process he would be laughed at by any one who has any knowledge of chemistry.

If you wish to make 1,000 fine gold the first thing to do is to dissolve your gold, and then, by some one of the number of processes that are employed, take out all the remaining impurities. I can make this statement: that there has never been a single ounce of foil put upon the market by our house, either before or since the formation of the present company, without the gold being dissolved and then refined by the wet process.

In 1870 I happened to be in the United States Assay Office when Dr. Torry, in a joking way, objected to our using the words, "chemically pure," on our foil books. I said, "Do you say it is not pure?" He replied, "Certainly. You cannot make a chemically pure gold. I can show you alloy in it." He offered to bet he could show alloy in any gold I could bring to him. I brought to him for trial a bar made from cuttings of our gold foil, and, although I am not a betting man, I smoked a good cigar at his expense, and I hold now the United States Assay Office's receipt for 1,000 fine gold. I was told at the time that the receipt given me was the first given by the office for 1,000 fine gold. That is the reason our trade mark, "1,000 fine gold," was adopted.

Some time ago I received a copy of the programme for to-night, and was told that Dr. Timme had asserted that he had analyzed all the leading brands of gold foil and had found impurities in all except the German Wolrab gold. I was also told that he would to-night submit in his paper the results of the analysis made, and that he would claim that no pure gold foil was made in America. A year ago Mr. H. M. Lewis sent me a few cylinders of the Wolrab gold. I recognized at once that it was a new departure. It seemed, mechanically speaking, softer to the touch than any manufactured gold I had met with. I recognized that here was a move ahead and I rejoiced at it. I went to work and made many very careful experiments, and the result was our velvet gold cylinders. I admit that this German manufacturer has stirred us up, and we thank him for it.

Thinking it only fair that if Dr. Timme had all the leading American brands of gold analyzed the Wolrab gold should also be submitted to the same test, I purchased from Dr. Timme a package of Wolrab cylinders and sent them to Prof. Charles F. Chandler, of the School of Mines, for analysis, and I take pleasure in submitting for your consideration Prof. Chandler's certificate of analysis.

[Mr. Johnson read a certificate of Prof. Chandler to the effect that

the gold submitted to him showed "minute traces of silver and small amounts of organic matter and iron. No tin is detected."]

If you refine gold by the best process known, with the utmost pains, and backed by a thorough chemical education and the best appliances, and you get a bar that is 1,000 fine, when you come to handle the bar in manufacturing, if you do not use the same care in handling the bar that you have shown in refining it, and even if you do take the same pains and care, you will have a very close rub to come out without a slight falling off in the finenees of the gold. In view of the figures given by Dr. Timme that you see on the blackboard, I think you will agree with me that when you come to weigh these traces of alloy with the analytical balance on a ten grain assay, and are requested to put your name to a certificate of half a thousandth, one should go slow and be pretty conscientious. Nine hundred and ninety-nine and one-half thousandths fine. Think what half a thousandth means. The half of one-thousandth of impurity that is found in a bar which assays 999½ thousandths fine is very easily accounted for by the handling of the bar after it has been refined. I think these gentlemen will find the gold of a number of American manufacturers to be very nearly if not quite pure; and the trace of impurity is possibly due to a little carelessness in handling it after it was refined. Of the golds reported upon by Dr. Timme only one shows a trace of silver. I am surprised that Dr. Timme's analysis do not show traces of silver. Almost any gold that is not handled with the greatest care will show minute traces of silver. I would like to know if any gentleman here present has seen assays or heard of assays of gold found to be actually 1,000 fine.

Dr. Richards—I would like to ask Mr. Johnson what is the difference between the ordinary foil and pellets and the velvet gold which he manufactures?

Mr. Johnson—I don't know but I ought to reply that answering that might divulge a state secret. Is it not possible that the crystallization of the gold enters largely into its working qualities?

Dr. E. T. Darby—Mr. President, Mr. Johnson has asked if there were any gentlemen present who had seen or heard of assays of gold that was 1,000 fine. The question recalls to my mind a statement that an assayer in Philadelphia made within a year. He said that of the gold presented to him for examination he had never, except in one instance, found gold that was 1,000 fine, and that was a specimen of gold that was submitted to him by the Johnson Bros., of New York. He said he found that specimen of gold to be absolutely pure, 1,000 fine, and he gave a certificate to that effect.

Dr. N. W. Kingsley—Mr. President and gentlemen, for thirty years I have been interested in this question of gold, and I am always anxious to get information when there seems to be any offered. I would like to know a great deal more about gold than I know now, or than I think I am likely to know. So far as the record on the blackboard is concerned, of the fineness of those various golds, to me it is of very little consequence. That gold should be 999, or

999 5-10, or down to 998, or anywhere along there, is a matter of no consequence to me. If it were but 995 fine I think it would be quite good enough for the use to which we put it. I have no idea that a gold only 995 thousandths fine would be, so far as the gold is concerned, objectionable in the slightest degree for any use that we have to put it to. In looking at this record of the excessive fineness of gold I was reminded of a remark made by an old friend in relation to some one who was posing as a model of virtue. He said, "Beware of an excess of virtue. When you see so much virtue you must be on your guard." I don't know but Mr. Johnson's gold is 1,000 fine. I don't know but it may be one thousand and fifty fine, except that he said he never heard of gold being over 1,000 fine. A matter of a great deal more consequence to us is the working of the gold. If I should find some gold that was only 995 fine, and that worked better than the finer golds, I would use it. I want a gold that will produce the best results I can possibly attain, no matter what may be the particular figures representing its fineness. Why is it that there is such a difference in gold? Perhaps these are state secrets which cannot be revealed; but if they cannot be revealed it is simply because these gentlemen do not belong to a profession. As they say themselves they must be outsiders. They have no such high standing and noble ambition as we have, or else they would tell us. We have no secrets. When asked a question regarding our profession we do not say, "that is a secret; we cannot tell you that." If it is a secret, and we cannot know anything about it, we will let it rest. I want to know why this gold that is offered to me works smoother than another, and I am told, "that is a secret." In one sense, perhaps, it is none of my business, but I would like to know. If you would kindly condescend to tell us why some gold works in a certain way and beautifully, and another gold works in another way and gives us trouble, you would escape a great deal of fault finding, and you know we dentists are invariably growling about something, and generally growling about gold. If there is anything that you know about it that we do not know, and that would be of service to us if we did know, tell us and we will be very much obliged to you I am very certain.

MR. JOHNSON—My friend, Dr. Kingsley, whom I have known for a good many years, says he would like to have me tell him something to-night that he don't know, and I think I can do it. He says, if I understood him correctly, that 995 thousandths fine gold would answer his purpose just as well as though it were 998 or 999.

DR. KINGSLEY—I said provided it works as well. If it works as well it is just as good for our use.

MR. JOHNSON—The "if" covers all the rest.

DR. KINGSLEY—The quality of gold does not wholly depend on its carat fineness.

MR. JOHNSON—It is not a fact that it will work as well as 1,000 fine gold. If it contains one or one and a half thousandths of some other metal it will crumble under the rollers. I was unfortunate in my remark about state secrets, perhaps, and laid myself open to the

doctor's criticism. I do not know that we have any state secrets, in one sense. We work conscientiously to obtain the best results, and we have certain methods by which we get the results, whatever they may be. We have to leave it to you, gentlemen, to decide as to the quality of our goods. We are ready to receive suggestions as to how we can better our manufactures; we are glad to get any information regarding their defects in order that we may try to correct them. The question why different kinds of gold work differently is one so broad that I hardly know how to frame an answer. If the gentleman has any special point that I can throw any light on I am perfectly willing to do what I can to aid him. A great deal depends on the method of manipulation. The crystallization of the gold does, in my judgment, affect its working qualities.

Dr. Frank Abbott—As illustrating the differences in the working of gold, and what a little alloy will do in certain cases, I will say that I had some gold made by a gentleman in New York, who said he could make it exactly as I wanted it. He brought it to me, and while I was using it the patient in the chair, being a little inquisitive, wanted to know how I knew this gold that I was using was pure. I said it was a very simple matter, and that we were testing it all the time simply by heating it red hot. I told him that a gold containing a little alloy would change its color after having been brought to a white heat. And I said, I will show you that this gold is pure. I took a piece of the gold, called his attention to its color, and put it in the flame. When I took it out, much to my astonishment and disgust, it was of a pale copper color. Of course I put the gold aside and took another kind for use in that patient's mouth. I tested that in the same way before the patient, and it retained its color after being placed in the fire. When I met this manufacturer a few days after that I spoke to him rather emphatically about his gold. He said the gold had three parts in a thousand of silver, and that he knew it would do certain work; that the addition of the silver would make the gold very laminable and exceedingly soft and nice. I told him to take the gold and take out as much of the three parts of silver as he could get out, and then let me have it again. This gold contained less than five parts in a thousand of alloy, yet it was easily shown by heating the gold to a white heat.

Dr. Kingsley—That incident is exactly to the point. Dr. Abbott never discovered until he put the gold in the flame that it was not 1,000 fine. As far as I can judge from his remarks, that 997 gold was working well, and he was satisfied with the working of it; and I may infer that he would have continued to use the gold and been satisfied with it had he not accidentally discovered that it was three one thousandths short of being absolutely pure gold. Probably the filling he was making when he made this discovery is as good a filling to-day as any filling he ever made of 1,000 fine gold. So I say it is the working of the gold that we are after rather than its thousandths of fineness. Was it not a fact that the gold was working satisfactorily to you?

DR. ABBOTT—The point that I looked to then was this: that any gold that would tarnish a particle in the lamp flame would be likely very soon to tarnish in the mouth, and I did not think I would be doing justice to the patient or to myself to use that gold any longer, and I did not.

DR. DARBY—My opinion is that the discoloration of gold fillings is largely due to the presence of iron on their surfaces. It has been said that Abbey made the only absolutely non-cohesive gold in the market; and some years ago Mr. Flagg called my attention to the fact that his gold was the only gold that presented a copper color. My chemistry may be defective, and I would like to ask Mr. Johnston if he has not found that the presence of iron on the surface of gold causes that copper color more than silver does.

MR. JOHNSON—That is quite right. Iron generally is the cause of discoloration in gold. As a rule, any alloy of silver inside of five one thousandths would not cause an appreciable change in color when the gold is subjected to heat.

DR. ABBOTT—Then that gentleman told me a story.

DR. TIMME—You admit that the introduction of this soft gold by Mr. Wolrab stirred up the American manufacturers?

MR. JOHNSON—Yes; it has stirred up the manufacturers. There is very much more labor in manufacturing the velvet gold than there is in making any other preparation that we put out.

DR. TIMME—You admit that Wolrab's gold was the softest gold in the market when you commenced to make the velvet gold?

MR. JOHNSON—Unquestionably it was the softest gold in the market. The credit is due to Mr. Wolrab, undoubtedly, of introducing this softer gold. When Mr. Wolrab's gold was submitted to me for examination I recognized at once its superior softness. We had a little apparatus made for testing the comparative softness of different brands of gold. It is very difficult to eliminate from an equation the unknown quantities. A dentist has the dyspepsia to-day and he says our gold is not worth anything. We place it in a new package and send it back to-morrow when he is feeling well, and the gold is all right. This is true; and what is true with you is true with us. When it comes down to the touch I think I can take a sheet of gold and tell you, by holding it in my hand, whether it will work well or not; but I would not trust myself to do that every day. We wanted to get a mechanical test of the comparative softness and working qualities of different brands of gold, so we devised a machine for testing the comparative softness of two gold cylinders. Care was taken to select for comparison cylinders of equal weight and diameter. The machine was very delicate in its construction, and showed with unerring certainty which of two cylinders submitted to it was the softer. In this way we obtained a satisfactory and reliable means—free from personal prejudice—of judging of the comparative softness of two sample cylinders. I went through a long series of tests of different golds in that way, both our own make and that of other manufacterers, and made many experiments before I could produce a gold equal in softness

to the Wolrab, and that would meet the requirements of dentists; finally we succeeded in producing the gold that is now known in the market as velvet gold.

DR. CARLETON BROWN—The discoloratin of gold in approximal cavities of the front teeth is a very unpleasant feature, and one that has been much talked of. Various reasons for it have been given, such as sulphur from the yolks of eggs, etc.; but can any of our gold friends give us any real and indisputable reason why this is? It is to be found in the gold itself as we receive it from the manufacturers, or in the condition of the mouth? Sometimes a gold filling will turn black, and another one by its side, made of the same kind of gold, will retain its color.

DR. HAYHURST—Mr. President, I have often been asked by those who came under my hands if I knew anything about the purity of gold, and it seems that the answer I have them has been partly right and partly wrong. My answer has been that they need never be afraid of impure gold being used in their teeth, because it would not pay a dentist to use inferior or alloyed gold. It seems that I was partly mistaken, and that inferior gold can be used without being detected by the difference in manipulation. I take it for granted that I am yet correct when I try to impress upon patients the idea that it is good policy on the part of the dentist and necessary to his reputation to use pure gold, as pure as he can get it. I am gratified to find from this list of tests that the manufacturers are giving us gold so nearly pure as that shows, and that we have so little to complain of in that respect. Dentists have different likings in the matter of gold, one preferring one brand and another preferring another brand. I have myself had such a preference and would not use the gold of one manufacturer; but I find that I was deceived as to the purity of that gold. There was something in the manipulation or manufacturing of it that made it not work well; still it was honest gold, and it ought to have done honest work. I do not know that I can tell my patients any more that they need not be alarmed in relation to the purity of the gold used, because I find that impure gold will work well: but I think that generally the principle is correct, that dentists cannot afford to use alloyed gold.

DR. G. E. ADAMS—Mr. President, I would very much like to hear the question asked by Dr. Brown answered. A short time since a patient came under my care who usually had her work done in an Eastern city, but being away from home and finding there was something necessary to be done she applied to another dentist, who put a gold filling in an approximal cavity in one of the central incisors. That filling discolored. The next season when she went home and into the hands of her own dentist she asked his opinion about it, and he told her the filling was made of impure gold. Since that time she came into my hands, and from my observation of it I do not believe it was made of impure gold, or was an imperfect filling. I should like to hear Dr. Brown's question answered, as to why some fillings lose their color.

DR. ABBOTT—Mr. President, I have a couple of plates here, one of platinum and the other of silver, showing on one end the impression of metal left upon them by the steel rollers; the other end being polished off. There is a deposit on the metal every time the plate passes through the rollers. No matter how it is worked, something is left upon the surface of the metal all the time; and that will in a measure account for the discoloration of the gold we get. Another cause of discoloration may be found in the fact that so many people are constantly taking iron in a liquid form into their mouths, the iron gets upon the teeth and discolors them very much; it discolers fillings considerably. People whose fillings discolor do not take proper care of their teeth, do not produce sufficient friction upon the surface of the gold fillings. As a rule, a filling that has turned black has had no friction upon it at all.

DR. MORRISON—Mr. President and Gentlemen, I am led to believe that the discoloration of approximal fillings is a result of the use of steel burnishers in polishing them. That has been my experience and observation. I have had my patients come back with the fillings perfectly black, and when I have polished off the oxidation, not using a steel burnisher, they would not discolor any more. I use a piece of silk and a little pumice for polishing.

DR. WATKINS—Mr. President, I think I can report a case right to the point. I filled at one sitting two small approximal cavities in the central incisors. They were partly exposed, that much discoloration would be objectionable. Two weeks afterwards, when the patient returned to have some other teeth filled, those two fillings were discolored, had become quite brown, and she complained of it. I had not used steel burnishers in polishing those fillings; I always use sand-paper or emery-disks. The gold used was White's 1,000 fine gold, so I think the gold cannot be complained of, and I know the discoloration was not due to the use of steel burnishers. The lady had not been taking iron in that time, nor any other medicine, and seemed to be in good health.

DR. JAMES TRUMAN—Mr. President, it is rather embarrassing to talk on the subject of gold alongside of gold manufacturers, but there was one point brought up in the course of the gentleman's remarks that appealed to me. The gold foil manufacturers in this country have always had my sympathy, because I believe that a large proportion of the difficulty that dentists have to-day in the use of gold is not the fault of the manufacturers but is due to the dentist's unskilful manipulation of the gold. We have seen here to-night that about all the gold foil in use is 999 one-thousandths fine. This is as pure as we really need it; and I have always been convinced that the gold foil in the market, of all the prominent manufacturers, is about equal to that.

But there is a point that I may allude to, and that is the crystallization of the gold. It seems to me, from observations that I have made in regard to gold and in regard to tin foil and some other metals, that the crystallization of the metal has more to do with the working of the different foils than perhaps we are aware of. If all

foils are supposed to be about equally pure there must be some other reason for the differences that we find in the working of the foils of different manufacturers.

Some years ago, in experimenting with metals, I found that in rolling metals, for instance tin, I could not get equal results throughout the whole length of the ribbon; some portions of it would be extremely cohesive while other portions would not cohere at all. I had the same results with Pack's rolled gold. The first book or books that I got worked beautifully; the next would not cohere at all. I was satisfied from those experiments that there was something in the gold itself, or in its preparation. I consulted Mr. Abbey in the matter and he told me it was owing to the compact arrangement of the crystals. It was his opinion that no rolled gold was very good. Being of that opinion myself I abandoned its use. We want to know, therefore, something more than we do about the crystallization of gold.

I cannot believe Mr. Johnson's statement that we have had no gold in this country as soft as Wolrab's. I know that Wolrab's gold is excellent, so far as its softness is concerned; but take Wolrab's gold and roll it up and place it in a lamp flame and it becomes harsh and works very unpleasantly. I have never found Abbey's soft foil, as we used it twenty-five or thirty years ago, to work in that way. Therefore, when the assertion is made that Wolrab is making a softer gold than we have ever had heretofore, I must oppose it; I do not believe it. Wolrab's gold, according to this analysis, is no better than the other golds we have in the market. So it must be the manipulation that makes it work better, if it does so.

A word in regard to the discoloration of the surface of gold fillings. That matter has been discussed for years, and the cause of it has never yet been given. We all know that such discoloration exists, and we know that it will come on one filling and not on another in the same mouth, so it cannot be caused by iron taken as a medicine, and it cannot be from the use of steel burnishers, because it is in evidence that it occurs on fillings that have not been so burnished. It cannot come from iron in the gold, because a series of chemical tests made by a committee in the Pennsylvania College of Dental Surgery some years ago discovered not a trace of iron in the gold then used. I went further than that, I filled a tooth and packed in the filling itself a little bit of iron, and there was no resulting discoloration. We have yet to find an explanation of the discoloration of gold. I do not believe it will be found in the presence of iron in the gold at all.

Until we, as dentists, learn how to properly treat and manipulate our gold, and until those who manufacture and retail it know how to treat it, it is likely that we shall have many varieties of gold. We all know that gold is changed in character by depositions upon its surface, and it is possible that in the course of handling by the manufacturers, the dealers, and the dentists who use it, the elements which deteriorate it may be deposited upon its surface. That

we shall ever be able to get gold of equal value and uniform good quality seems to be impossible.

DR. R. B. WINDER—I have examined specimens of teeth which had been filled with gold and several of the fillings showed discoloration, in one case to a very remarkable extent. There has been no iron in contact with them, they have all been kept in glass cases and subjected to the same atmospheric changes, yet there is this remarkable discoloration, showing almost all the colors of the rainbow.

MR. JOHNSON—Were there any specimens of amalgam fillings in the same case?

DR. WINDER—Yes; I think there was.

MR. JOHNSON—I think you will find in that fact an explanation of the discoloration, the action of the mercury in the amalgam. Statements of phenomena made by gentlemen who are not very close observers must be taken with a grain of allowance. I have frequently had dentists tell me that such and such was the case, and the matter seemed very singular until, by asking a question, I found they were speaking of two different mouths, in one of which there was mercury and in the other not; and perhaps that would be the answer to the whole question.

If I remember my remark correctly I did not state that Wolrab's gold was the softest in the sense in which the Professor puts it. I intended to state that it was in the mechanical preparation, not *per se* in the nature of the gold; not that the texture of the bar was itself softer, but that as a mechanical preparation, owing to the form it was in, it was softer than anything we had ever had on the market, and I say so now. At that time no gold had been put on the market that was as soft as that which he put out. I think we use the word soft in a double sense. A gold may be very soft, you may be able to work it under a burnisher like lead, and when you get through you can cut a smooth shaving from it; then another gold will be so different in working that when the burnisher goes over it there is a tendency to form knobs, the instrument does not run smooth, the surface will be uneven, and the touch detects a grainy character. I wish I could tell you why this is. I can only say it is a fact. It is easier to ask questions than it is to answer them.

Dr. R. FINLEY HUNT—Mr. President and Gentleman, I have listened with great interest to the remarks made. I have heard many discussions upon the subject of gold for filling teeth and the reasons why it does not always behave well, and I must acknowledge that in the discussion to-night there has been developed more of the true scientific and practical principles of the question than I have ever heard before. I am very glad to have our gold manufacturers talk to us, because I have been learniug to-night. In speaking of the properties of gold and its manipulations, Mr. Johnson emphasized the fact that in order to prepare really pure 1,000 fine gold it is necessary to be extremely careful and delicate in its manipulation. The lesson I have taken from that is that the same fact will apply to our handling and manipulation of it after it

comes to us, and while we are putting it in the mouth; and I want our profession to emphasize the importance of delicate and careful handling of the gold after it comes into their hands. There is a great deal in that handling of the gold. It is necessary to watch it at every step and in every respect, because gold is a very pure and delicate material, and one that is affected by a great many different circumstances into which it is brought.

DR. WATERS—Mr. President, I would like to ask if this discoloration is not more frequently noticed in cohesive gold fillings than in non-cohesive; and whether this discoloration may not be due to carelessness in annealing the gold when preparing it for the cavity. Is it not probable that in the process of annealing we may get upon the surface of the gold the elements that give it this iridescent appearance? I would also ask Prof. Winder if the filling he speaks of was not a cohesive gold filling?

DR. WINDER—I am not positive. I really do not know whether it was soft foil, non-cohesive or cohesive, but I am inclined to think it was non-cohesive.

DR. HUNT—I think I recollect the filling that Dr. Winder speaks of, and if I am correct it was a contour filling, and, therefore, must have been made of cohesive gold. My recollection is very distinct that this filling that showed the iridescent color was a contour filling, and if that is so it could not have been made of non-cohesive gold.

MR. JOHNSON—I have made careful examinations of gold foil, both after and before it has been annealed, to form some judgment as to why it shows the peculiar characteristics it does after annealing. You all remember Dr. Black's interesting paper in regard to the condensation of gases upon the surface of metals. I think he gave us the best paper ever written upon that subject. The pure gold is melted at a moderate temperature; it is volatilized at a high heat. I think there is no change in the color of fine gold under any heat that is used in the office of a dentist. The reason why gold foil welds after being heated is, as you all know, because there is no oxidation on the surface, which is thus left pure and clean. And the reason why its cohesion is brought out by heat is plain: the crystals are all flattened down when it is beaten. When gold is heated there is a change in the position of the crystals: the crystals stand up, as the barbs of a human hair when seen under the microscope, and when brought together they lay hold of one another. If you keep your gold and your matches together in the same drawer you will have soft gold in the sense that it will not weld. Two bars of pure gold can be so prepared that you will say one of them works hard and the other soft, yet they will be both equally pure. I use the word soft now in reference to the texture of the gold. I have seen gold in which the crystals were as long as rice kernels. If you have made steel instruments you know there is a great difference in the working quality of the various grades and makes of steel; there is fine grain and coarse grain steel. Why should you be surprised when gold of a certain form of crystaliza-

tion works one way, and gold crystalized in a different form works another way?

DR. LUCKEY—Have you ever noticed the crystals of the gold sticking out when examined under the microscope?

MR. JOHNSON—I think I have. I would not like to say that positively.

DR. LUCKEY—I have never yet been able to see the crystal formations on the surface.

MR. JOHNSON—I am not an expert in microscopy, but I have made experiments in that way. You have, of course, to use a low power. The crystalization is an important point in my opinion; but no more important than the exclusion of the gases from the surface by heat. Some gases are driven off by annealing very readily, and there are other gases that it is almost impossible to drive off. The extreme non-cohesive property of Abbey's foil has been referred to, and it has been frequently suggested that there might be a combination of some non-metallic substances which would account for its non-cohesive nature; that the gold might be pure so far as the presence of any other metal is concerned, and yet might have some combination with non-metallic substances, such as sulphur.

DR. J. B. LITTIG—Mr. President, I think that our friend, whose name I cannot remember, has struck the key-note in regard to the discoloration of gold. The cause of it is to be found in the manipulation of it after it leaves the hands of the manufacturer, more than in gold itself. As Mr. Johnson has said, it requires very peculiar and careful manipulation to get a pure gold, and we are not often very particular in our folding, annealing and handling of it. Another cause of discoloration is, in my judgment, a deposit on the surface of the filling; and the fact that one filling may become discolored while another one in the same mouth may retain its color, is perhaps due to difference in the hardness and smoothness of the surfaces of the fillings. If the surface of the filling is not very hard and smooth any deposit upon it will be received and held, while another filling that is hard and smooth will retain its color much better. I have very seldom if ever seen fillings discolored that had been put in with the electric mallet, which is because, I think, the gold is folded very carefully in a napkin and not handled until it is placed in the tooth and condensed; when condensed the fillings are very solid and the surfaces very smooth, and a deposit will not adhere to such a surface. I think the cause of discoloration is in the manipulation of the gold and not in the gold itself. It is all a mystery, and we are jumping at conclusions perhaps, but that is the opinion I have formed in regard to the causes of discoloration sf gold fillings.

DR. G. CARLETON BROWN—According to Dr. Littig the discoloration is from the outside. What caused me to make the remarks I did was a case I had in mind. I put in two fillings on the approximal surfaces of a central and a lateral incisor. They were filled at the same time and with the same kind of gold, rolled at the same time on a napkin with the same instrument, the electric

mallet being used for condensing; yet one of those fillings turned perfectly black and the other retained its color, they were neither of them burnished, a sand-paper disk being used in finishing off. It has been a puzzle to me why one of those fillings became discolored and the other did not.

DR. LITTIG—Did you remove the discoloration from this filling when the patient returned to you?

DR. BROWN—I polished it off with sand-paper, and afterwards the same discoloration came back. I polished it off again, and since then I have seen no discoloration.

DR. LITTIG—I think it must be due to a deposit upon the surface. When the Doctor got the filling down to a hard surface it did not discolor again.

DR. BROWN—What caused the discoloration in the case where the patient took no iron or other medicine.

DR. LITTIG—I think it is due to the unpolished surface of the filling; which permits the deposits to take hold and remain.

Paper passed.

THURSDAY MORNING.

The roll called.

The following proposals for membership were received and ordered to take the usual course: J. V. Hall, of Somerville—sponsors Drs. Goertz and Meeker; Thomas Moore of Paterson—sponsors Drs. Luckey and Palmer.

Dr. Alonzo Boyce, a delegate from the Odontographic Society of of Pennsylvania, was presented.

The Board of Examiners reported favorably upon the names of Drs. J. V. Hall and Thomas Moore, candidates for membership referred to them.

The President appointed as tellers Drs. J. C. Clarke and C. W. Meloney. Ballots were taken, and Dr. J. V. Hall and Dr. Thomas Moore were duly elected members.

Dr. JAMES G. PALMER read a paper on

SOME THOUGHTS ON THE SELECTION OF FILLING MATERIAL.

It is not my purpose to give you a lengthy article on what is or is not the best material to be used in filling any special cavity of decay, nor shall I be at all likely to state anything new, but if I can present a few ideas on the selection of material for some general divisions of the work we have to do, in such a manner as to provoke some discussion, I shall feel satisfied, for, as "iron sharpeneth iron, so a man sharpeneth the countenance of his friend." For this purpose we may arrange our remarks under three groups or classes,

which will suffice on general principles to govern largely in the selection of the proper material.

FIRST—In regard to the general character and relative strength of the teeth, whether delicate and frail, or strong and firm; the general health of the patient, and the age of the patient.

SECOND—The intelligence of the patient and the ability possessed to appreciate time given to any lengthy operation with such a material as gold.

THIRD—The financial ability of the patient.

I would also divide for our purpose the material most used in filling cavities of decay into three classes—gold, amalgam and plastic materials, including oxy-phosphate, oxy-chlorides, and gutta-percha under this last, and tinfoil in many cases where amalgams might be used.

In considering the general character and relative strength of the teeth, the general health of the patient, and the age, all intelligent dentists will see that but little can be said. The question of discrimination between metal and plastic material is of small moment when the teeth presented are very frail and crumbling, or when a child of twelve or fourteen is presented to us, in whose mouth we find nearly all the teeth affected. When the latter are presented to us there is no question in my mind as to the material; it must be, of necessity, one of the plastics. So in the case of older patients, when the teeth are soft, or when the system has been impaired and weakened, when the teeth are very sensitive, the dentine soft and yielding, metal will not answer a good purpose. It will not remain in the teeth as we would desire it to for any length of time, while on the other hand plastic non-conducting substances will preserve and tend to make healthy.

As to the intelligence of the patients and their ability to appreciate our endeavors. These things need consideration very frequently in our practice; much more frequently, I imagine, in any practice outside the large cities than in a practice in a large and wealthy population. The fact of being well able to pay does not make a great deal of difference with this class. True, there are a few who will say, "do as you think best," but of these many, not understanding our explanation of what is the best for any given case, will demand gold here where the operator knows that it ought not to be used, or amalgam there where there may be graver reasons for not using that as against the former case. In some cases it may do to refuse their demands, but many a man in a comparatively small country population has to allow such people their own way to a very great extent.

As to the patient's financial ability. We who practice in the smaller cities have also to take this into consideration much more frequently than many of our professional brethren in the larger cities can possibly imagine. And this one thing—the ability of the patient to pay our fees, frequently decides between the use of gold or amalgam, where it has been decided that metal should be used. There are many cases which come under our care when, by using

amalgam wherever possible, the teeth may for a long while be preserved and made useful, and if ever the patient feels able to pay for gold the amalgam can readily be removed and the gold substituted. I do not wish to be understood as saying that such is the best course to pursue, viz.: the removal of amalgam when it is serving a good purpose, but it can be done.

I reside in a college town. Connected with the college is a theological institution. Many young men of limited means enter college, intending after graduating to enter the theological seminary. When they are in need of the services of the dentist they must, of necessity, either lose the teeth or have some material cheaper than gold used. Plastic materials are not wanted, they will not wear long enough. It must be either gold or amalgam. It seems to me more than charitable to use amalgam in such cases. And this brings me to a short consideration of the reasons for my taking this subject. Continually we find cropping out in our magazines and periodicals the statement that so and so never uses amalgam, or that he rarely uses it; that gold should always be used when a metal is indicated. I remember not a great while ago seeing the statement from the pen of an eminent Western dentist that for, I think, over twenty years, amalgam had not been used in his practice. He further stated that whenever he could use a metal he used gold. and by inference one would presume that that was about always. But he, like nearly all of his class, did not say what should be done for those of the poorer classes who could not afford gold, nor what he would use in nearly inaccessible or very difficult cavities as, for instance, the posterior portion of a large, well-developed second molar, where the wisdom tooth is in position and the cavity, while approximal, is near the gum. They simply say, "don't use amalgam, we never do." He would agree with me that something other than gold should be used. But if in a case where a plastic material would wear out speedily, and gold could not be used, why not use amalgam? But no, he would not have the material around.

As I have said, the poor student, intelligently understanding the wants of his teeth, tells us to do the best we can within his means. If we use plastic material in those cavities that do not show, it will, as a rule, not do him the service required. If we use gold for him he cannot pay us for our time. If we use gold where absolutely necessary and amalgam where we can, we manage to come within his means and we save his teeth, thus fulfilling to the utmost our mission to benefit humanity.

Gentlemen, I do not want this to be considered as a plea for amalgam. I believe in being genuinely eclectic; in discriminating between the best and the worst; in using that which for any given case is the best for that case. What I most object to is this: If Dr. So-and-so thinks gold is the only metal to be used when he expresses his opinions let him tell us what he would use, what he would advise others to use under like circumstances. This most such writers fail to do, and the young, studious dentist is left in the dark to grope his way out by sad experience. If I have said

enough to provoke some discussion on this subject I shall be satisfied.

DR. WATKINS—Mr. President, it is rather embarrassing for such a young man as I am to attempt to open the discussion of a paper like that in the presence of the distinguished men I see around me. I agree with Dr. Palmer in a great many things in his paper; and one point that he has mentioned I will say a word on, and that is the use of tin foil in the position he spoke of—in the approximal surface of a second superior molar where the cavity extends well to the neck of the tooth. There are many cases where it would be excellent practice, in my judgment, to half or three parts fill such a cavity with tin foil and then simply top it off with gold, which wears better than tin and looks better when exposed. Tin is too soft for use on a masticating surface. I do not agree with some of my friends in all cases with regard to the use of amalgam in many frail teeth. I do not think it is good practice to place a very dense filling in a soft tooth, or one of poor material. I believe there are many cases where amalgam is put into cavities in the approximal surfaces of bicuspids—the teeth being soft—when it would be better practice to use tin and gold, and for the very reason that amalgam is put in, because the teeth are soft. I am of the opinion that tin and gold combined would make a very much better filling for such teeth than amalgam; filling the cavity partly with tin and topping off with cohesive gold. I believe that many such teeth are filled with gold alone fail because the gold is entirely too dense for the substance of the tooth. The condensing of the gold brings such a great strain upon the walls of the tooth that in a little while they fail. So with amalgam; it is much more dense and hard than the tooth substance, and in the continual jar of mastication something is bound to give way. If the filling material is softer, such as tin and gold combined, it yields a little to the force applied in mastication and the walls will not so readily break away.

DR. HAYHURST—I do not understand, from hearing only the last part of the paper, that it is a comparison between gold and amalgam. It is a question of policy as to what is to be done in certain cases where the patient is too poor to pay for a gold filling; whether our treatment should be given as in other cases, or whether it is best to let the teeth decay and then be extracted. I understand it is in relation to the trouble there is with the young practitioner in groping his way to find out what is best to be done. I can remember very well myself when it was difficult to find anything except what you got by your experience; and these meetings, where we come together and compare notes and methods of practice and learn from each other, are of great benefit. I do not see in this paper any great matter for controversy.

DR. N. W. KINGSLEY—Mr. President, I do not rise to criticise the paper, nor to specially commend it. I have heard the same sentiments expressed many times, have commended them from time to time, and have got a little tired of commending the same old chest-

nut; therefore I shall not either compliment or criticise the paper, but rise simply to say a few words on the same subject.

For a great many years, more than I care to mention, because I like to be considered still a young man, I have listened to discussions upon this subject, and I have often queried whether the gentleman who was talking was trying to humbug his hearers or to humbug himself, or whether he was strictly honest and an idiot. I don't know yet. Let me illustrate. Within the last two weeks there came into my office a gentleman who is one of the oldest practitioners of dentistry in the United States, and one of the most finished and skilful of operators, and he was telling me of an operation he had performed that day. The patient was a lady over 50 years of age, and the tooth a second upper molar, very badly decayed on the posterior approximal surface, also involving the grinding surface; it was a mere shell according to his description. He went on to describe all the details of the process from beginning to end, because it was more or less intricate, involving first the curing and then the filling of the tooth with gold; and among other things he remarked that it took nearly two-eighths of gold to fill the tooth and several hours' work, and it was a beautiful thing when finished. I have no doubt about that, to look at. There was standing by listening to his story a young lady who has been an assistant of mine for a number of years and whose head is pretty level on such subjects, and at the close of the gentleman's remarks she said, "Doctor, why didn't you save the poor lady all those hours of torment as well as considerable expense, and save your own time and labor, for you say you are terribly fatigued, by putting in either a gutta-percha or an amalgam filling?" I thought that was a sort of a clincher, and the gentleman seemed to take it that way too, for he wriggled a little and really could not answer the question. The only answer he could make was that the lady expected gold. She expected gold! Now, I think, gentlemen, that we are very often governed by that idea that the patient is expecting something, when we might do a great deal better for them if we would follow our own ideas of what is necessary and be governed by our own brains if we have got any.

The other evening a gentleman told me how many hours he had sat in torture under the hands of another distinguished operator—not the one I have been speaking of—while gold was being hammered into his teeth, and he said, "Doctor, is there not some way in which my teeth can be saved without going through all that torture? And then the queerest thing about it is that I never go to him but some one of these gold fillings is leaking somewhere and has to be patched. Can't you dentists find some other way to save a man's teeth?" I asked him if all his fillings were gold, and he replied that he believed they all were but one. "What is that?" I said. He said it was rubber or gutta-percha. He also said, in answer to my questions, that the reason the dentist gave for putting in the gutta-percha filling was that he could not use gold in that tooth; that the gutta-percha filling had been in five or six years and never had given any trouble or required any repairs, and that he

went to his dentist once or twice a year and the dentist said there was no leaking about it. Then I said, "What do you think about that yourself?" "Well," he said, "that opens my eyes. Why could not I have had the other teeth filled with gutta-percha also?" I said I did not know.

Now, gentlemen, would any of you, with all your experience, submit in every instance to what you impose upon your patients in the way of gold filling? Would you not tell the operator that you know a better or an easier way? The dentist knows an easier and better way, but the fee has something to do with it. When he puts in enormous gold fillings he charges his patients anywhere from twenty to fifty dollars, and although he may not have a large practice, if he has a few patients for whom he can make big gold fillings like that he can keep himself busy in putting them in and patching them up from time to time. Gentlemen, I do not perform those big operations. Not because I can't do it; occasionally I have shown that I can; but I do just what I would like to have a dentist do for me under the same circumstances, as near as I can.

I was listening recently to a discussion of this new method which is coming forward with such a flourish of trumpets, and about the immense amount of gold that is put into a cavity and rolled around until the top is reached and the filling finished off. Now, taking as an illustration, a large cavity in a molar tooth opening on the grinding surface but not involving the approximal walls nor the buccal, but going down until it seems to have gone all round the nerve pulp without actually exposing it, and leaving not much more than an egg shell. I know men who will lay great stress upon laying gold in such a cavity, and working around it with the utmost care, packing it very solidly from the bottom to the top, so that the specific gravity of the plug would be equal to that of a cast gold ingot; and they believe that in doing that they have done the very best thing in the world for the patient. Why not fill that cavity to within one-thirty-second of an inch of the surface with some of our plastics—of which I prefer at present oxy-phosphate to any other—and when it becomes hard, which it will in a few moments, cap it with gold? I have done that in hundreds of cases, and the failures of those operations of mine have only come under the observation of other dentists—not my own. By that remark I mean that I have never come across a failure yet; and if there have been any failures it is my confreres who have discovered them. This method saves time and pain to the patient, and saves your own time and strength, and depletes your pocket if the charge is gauged by the time and labor expended, but if your fee is to be made in accordance with the benefit you have conferred upon your patient you have done fifty dollars' worth of service to the patient in that way when you might not have done ten the other way.

Many years ago, before the State Society of New York, with considerable timidity, I said something about how I had been for some time taking care of approximal cavities in bicuspid teeth; and these approximal surfaces of the bicuspid teeth is where you first look

for decay when a patient comes into your office, and where you find gold fillings most frequently need patching. I said that for some years I had been partly filling these cavities with amalgam and then finishing with gold, and had found no reason to regret it. Well, as the years went on I could say it with less timidity; and I think I can say it now with a great deal of boldness; and that a man who adopts that practice will save more of those teeth than he will if he uses gold only. It is very rarely that I have found one of those fillings fail; speaking from memory I should say never, but I will quote from Pinafore and say "hardly ever," so as to be on the safe side.

Dr. J. B. Littig—Mr. President, if I were in a New York society nobody would have asked me for my opinion upon anything, because they know I am very reticent. I will make one suggestion in regard to cases where the pecuniary condition of the patient has to be taken into consideration as well as the time spent upon the operation. I have found that I can make a saving operation, and one which is to all external appearances equal to gold, by filling the cavity nearly to the surface with Robinson's felt foil and then covering that with gold. It has the same appearance when finished; and as far as the success or failure of the operation is concerned. I think I can say, with Dr. Kingsley, that if they have failed it has remained for others to find the failures; I have not found them. I think also that in many cases like those Dr. Kingsley speaks of, if he would, instead of using amalgam on the cervical margins, use Robinson's felt foil or tin foil, especially in frail teeth, he would find it advantageous, and need not be so afraid to mallet the gold against the frail margins of the cervical portion of the teeth. With respect to the durability of other fillings, I will say that I have in my own mouth two gutta-percha fillings which have been in there nearly fifteen years; and I have also in my own mouth a tin filling in one of the approximal surfaces of a lower bicuspid that was put in in 1861, while I was a student in the Baltimore College of Dentistry, and it is still in perfect condition. It may be black, but it has remained in good condition otherwise, and has preserved the tooth. I believe that in places where there is not sufficient friction to wear them out there are no better fillings than those made of tin foil or gutta-percha. There is no worse filling for a tooth than a poor gold one; and, gentlemen, if you cannot put them in well you would better use some other material.

Dr. Atkinson—The great difficulty in these matters is that we have not the moral scale sufficiently fixed in our minds to have a standard of the way to do work as it ought to be done to satisfy an intelligent mind. Those men who are afraid of spoiling a tooth by driving gold against its weak walls utterly misapprehend the facts of the case. The injury, if any, is invariably done by the sharp instrument that passes through the gold and checks the wall of the cavity. It is too late a day to say that imperfect fillings are first-class, as I heard when I came into this room, although they may be made by men of first-class reputation. There is no first-

class man who cannot afford to fill teeth as they should be filled, although his creditors may object sometimes. Men may talk against cohesive gold until they are gray. They ought to understand that it is not the particular material that is placed in a tooth that saves it. Any kind of substance whose affinity for oxygen is satisfied, if put air and moisture-tight to the walls of a well prepared cavity, will save a tooth.

Dentistry means the restoration as far as possible of the organs of the living human body from a deteriorated state to a healthy condition. You cannot take away all that part of the tooth substance that is affected by disease without exposing the pulp; and it is really only the margins, where there is liability to leakage, that need to be carefully protected from the ingress of acids or alkalis, or whatever it may be that causes disintegration. I want to endorse what was said by Dr. Kingsley, a man I do not always endorse. He said that it was a bad policy to place a large amount of gold in a living tooth. That goes without saying. If the pulp is nearly exposed the great conductivity of the gold will endanger the life of the pulp. The safest filling materials for sensitive teeth would be those which are nearest in conductivity of heat and cold to that of the tooth substance; and the aim should be to make the plug air and water-tight near the margin of the cavity. That is about all there is to it. I would just as lief leave half a shell of twenty-eight pure gold, or 18 karat gold, over the place of decay, the cavity remaining entirely hollow, as to have the cavity filled, provided this shell perfectly excluded air and moisture on its margins and afforded sufficient resistance not to be broken down by the occluding teeth. It is the perfect adaptation of the filling to the walls of the cavity, and an exact occlusion with the opposing teeth, that makes it a success. I have never seen a perfectly adapted filling to the walls of the cavity, and which was air and moisture-tight at the margins, that did fail, either at the cervical walls or anywhere else. The failures have been due to some mechanical defect or misapprehension of diagnosis, or the cavity was not properly prepared by cutting away that portion of the tooth substance which contained the ferment—these have been the antecedents of decay.

The proper occlusion of the teeth is an important point to be considered. You should not bring more pressure upon a tooth that has just been manipulated than the other teeth bear if you expect success.

Is gold, then, the best material for filling teeth? with a modification, yes. But for facing fillings I know of nothing that is so satisfactory as platina and iridium mixed with gold in the preparation, covering with it the cutting edges and grinding surfaces. It will stand longer then the tooth substance itself will stand. If we could get some material that would exactly coincide in resisting power with the tooth substance itself, so as to have everything wear down *pro rata* by contact with the other teeth, then we would have a perfect filling. I am as full of it as I can stick; and what I say

I say always with the courage of my convictions, for I know many men who are doing excellent work inspirationally, without being able to justify the mental process through which they went to effect the good results.

DR. JAMES TRUMAN—I don't know, Mr. President, that I have anything special to say on this topic. It is as old as my professional work, and almost as dry. Yet it is always coming up, and is never without interest, certainly, to the younger generation of dentists. I agree with the most of what has been said; and especially with the remarks of the essayist and Dr. Kingsley upon the importance of eclectic practice in this matter. The old idea that gold can always be used has gone by. I am sure it has gone by so far as I am concerned. We all know that it is impossible to use it under some circumstances. I would oppose, however, Dr. Atkinson's idea that failure of fillings arises from lack of care in the work around the free margin of the cavity. Let him place in a tooth as good a filling as he can, and I think he will find that it will require touching up around the margins in the course of time. That cannot be prevented. With the constant presence of secretions around the cervical walls we cannot help some disturbance going on there. There is a pathological condition that we cannot overcome, and no matter how well the cavity may be filled, with either amalgam, tin or gold, it is impossible to wholly resist the disintegrative action of acids at that point. I think we make a mistake in making the assertion that success is simply a matter of care. No matter how well gold may be placed around the cervical walls of a cavity, decay will sometimes recur at that point.

DR. DEANE—Mr. President, I will give a method that I have practised for the last five years about. I do not know whether any other dentist does it, or whether it is good practice or not. It is the placing of an oxy-phosphate lining in almost every cavity, and while it is still soft packing in amalgam. For approximal cavities I first put in a little amalgam largely composed of copper, then fill the remaining portion of the cavity with soft oxy-phosphate, then put in amalgam and press it in until it nearly replaces the oxy-phosphate. By this means we have, in the first place, a perfect non-conductor, and, in the second place, we have a hard and moisture-proof edge to our filling. We certainly have a sticky substance that will adapt itself to badly shaped cavities which cannot be properly shaped without impinging upon the supports. I would like the opinion of gentlemen upon the utility of this practice.

DR. WATKINS—Mr. President, I can endorse what Dr. Littig said in regard to Robinson's fibrous filling material. I believe I had the honor to be the first man in the State of New Jersey to use that material, and I think I have induced a good many of my friends to use it. The first case in which I used it was a lady about 30 years of age, for whom I filled approximal cavities in two very frail bicuspids, using Robinson's material for the body of the filling and simply covering the surface with gold to give the filling a good color. That was about five years ago. I had the pleasure of seeing those

fillings within a week past. The gold is there and they present as good an appearance as when they were first put in. They were made not to touch the lower teeth, so they would not wear out. I took particular notice of the cervical walls when I saw the fillings recently, and they seemed to be in perfect condition. I am certain that I saved at least two hours time by using this fibrous material in that way. I did not charge nearly as much as I would if I had filled the cavities with gold only, yet I think the fillings are fully as good in every respect. I use tin in the same way, finishing the filling with a little gold on top of the tin.

Paper passed.

THE CHAIRMAN—Gentlemen, the next in order will be incidents of office practice.

DR. WATKINS—Mr. President, I had a case of a lady about 17 years of age who had a lower second molar extracted some thirteen months previous. In extracting the tooth it had been broken several times and was taken out piece by piece, the surrounding bone being considerably injured, and she returned to the dentist several times during the year to have little spiculars of bone removed. In the meantime a considerable portion of the bone became necrossed and abscesses formed and were opened from the outside of the face. I think five times abscesses were lanced from the outside of the face. Finally the surgeon sent the patient to me. I examined the case and made an appointment to remove the necrossed bone. The surgeon administered ether, and after dissecting away the gum with the dental engine and large burs, I cut away all the necrossed bone from the angle of the jaw to the line of the cuspid tooth. The bicuspids and molars were missing. I cut away all that bone except the outer plate, which was not necrossed. I left the outer plate, which was apparently healthy, to give strength to the jaw. The patient was kept under the influence of ether during the operation. It is surprising how nicely and surely you can follow the line of living bone with the bur by the sense of touch when one has had a little experience in these operations. After the operation the parts were washed with aromatic sulphuric acid, and then iodoform was applied. Yesterday morning when I saw the patient the wound was nearly closed, there being only a little opening in the upper part of the gum. Two or three weeks after the operation I removed a small piece of bone which had worked loose, then the healing went on beautifully. The scars on the side of the face are gradually disappearing as well as that peculiar appearance that follows an abscess. I think that in a little while it will be hardly noticeable. I put iodoform in the cavity and placed cotton over it to retain it. As the healing went on it became difficult to keep the cotton in. There is now very little space remaining to be filled and there is no soreness at all.

DR. TRUMAN—Have you found any unpleasant effects of this iodoform?

DR. WATKINS—None whatever. I have used it in many cases in the same way and I have never seen any unpleasant effects.

DR. LITTIG—Mr. President, may I be permitted to state a case. The case just described by Dr. Watkins is an ordinary one, and I see no reason why he should not have been successful with it. The case I speak of was one very difficult to diagnose and difficult to prognose. A German married lady had some difficulty of vision and inflammation of the left eye, which resulted in suppuration and inflammation of the lachrymal duct. In the course of treatment, which was conducted in the Eye Infirmary in New York, there was an extension of the inflammatory tract to the alveolar process of the left superior cuspid. The lachrymal duct was treated very nearly successfully, although there was more or less swelling, and an apparent swelling of the antrum, although I doubt whether there was any extension of the walls of the antrum. But during the course of a few weeks the alveolar process surrounding the left superior cuspid became inflamed, while the root of the cuspid itself was perfectly healthy in every respect; and the tooth was finally lost through loss of the alveolar process. The question that arose in my mind was, what could have been the connection between the inflammation of the lachrymal duct and the extension of the inflammation to the alveolus of the left superior cuspid. During the course of the treatment we removed all the necrossed bone, also a line of bone which was possibly and apparently the line of the lachrymal duct from the left superior nasal cavity, showing that the inflammation had really extended to the borders of the lachrymal duct, low down. The question I want to ask is, what connection was there between the inflammation and suppuration of the lachrymal duct and the destruction of the alveolar process of the left superior cuspid?

DR. BODECKER—Mr. President and Gentlemen, I have the honor to introduce to you Dr. William Herbst, of Bremen. You will have to excuse him from answering, because he is unable to speak English.

THE CHAIRMAN—In the name of the New Jersey State Dental Society I would extend to Dr. Herbst a cordial welcome, and I hope we shall become better acquainted, both personally and professionally, with himself and his work.

The report of the Special Committee on the President's Address, with reference to the death of Dr. Pierce and Dr. Cosad, was read and the report accepted, as follows:

WHEREAS, It has pleased Almighty God to remove from our midst our friends and fellow-members, Drs. J. W. Cosad and A. A. Pierce, whom we all loved; therefore be it

Resolved, That while we bow to the Divine Will, we deeply regret our loss, and shall always cherish a sincere regard for their many virtues.

Resolved, That a copy of this resolution be spread on the minutes of this Society, as a memorial of the esteem in which we held them.

(Signed) A. R. EATON,
WM. P. RICHARDS,
GEO. E. ADAMS,
Committee.

DR. HAYHURST—Mr. President, perhaps there were no two members of our Society who were so near my heart as those two deceased brothers of ours whose names you have just heard, and I feel as if I might say a word or two in relation to my acquaintance with them and their connection with our Society. Both of them were elderly men, and I may say brothers with me and fathers of this Society. Dr. Pierce, as you all know, was one of the oldest members of the Society. He was always in attendance, and always ready, so far as his capacity, his age and his difficulty in hearing would permit, to do any work that was set before him to do in the Society. Dr. Cosad you know was also one of the fathers of the Society. He was near to me indeed, being associated as we were among the Society's first and oldest members, and more intimately in connection with the Examining Board, of which we were both members for many years. As the good men of our Society and State, and as the good men of our country pass away and the grave covers them, it is but meet that we should erect in our hearts, as well as record on our books, a memorial of their worth as citizens and their services as professional men. Can we all expect, when we shall have passed away, and we all have to follow in their track, can we expect to be regarded as they have been, and as they are? I feel indeed as if the membership of a family had been torn asunder. As we weep for them we feel assured that the world is better for their having lived in it, and let us so live that when we shall have passed away it may be said of us that the world is better for our having lived in it.

Adjourned.

FRIDAY MORNING.

The convention met and proceeded to the election of officers.

Dr. A. R. Eaton was nominated for President.

Dr. G. Carleton Brown and Dr. B. F. Luckey were appointed tellers.

A motion that the Secretary cast the ballot for Dr. Eaton prevailed, and Dr. Eaton was declared duly elected President.

Dr. G. Carleton Brown was nominated for Vice-President.

The same motion prevailed and Dr. Brown was elected Vice-President.

For Treasurer Dr. Geo. C. Brown was nominated and elected by Secretary.

Dr. Charles A. Meeker was nominated for Secretary, and was duly elected in the same manner, by the President casting the vote.

Drs. F. C. Barlow, Fred A. Levy, Jas. G. Palmer, C. W. Meloney and J. Hayhurst were elected a Board of Examiners.

For the Executive Committee Drs. W. P. Richards, B. F. Luckey, G. E. Adams and S. C. G. Watkins were elected.

The question was put and decided in making Asbury Park the place for the next meeting.

DR. CHARLES E. FRANCIS read a paper entitled

PROFESSIONAL COURTESIES

IN CONNECTION WITH WHAT ARE COMMONLY CONSIDERED AS FAILURES IN DENTAL PRACTICE.

The course of human effort seldom runs smooth and the daily routine of active life is checkered by varied experiences that denote a perpetual contest between fortune and fate. An ancient proverb declares that all creatures are victims to circumstances, and certain it is that to a large extent circumstances frame men's opinions and govern their actions. And likewise do circumstances revolutionize established ideas, modify fixed methods and vary the ever-flowing currents that sweep the shores of prosperity or adversity. Inclination may suggest enterprises which adverse circumstances render difficult or impossible to execute, and tasks undertaken with fair hopes of success sometimes terminate in failures and disappointments. Unforseen contingencies possibly arise; unfavorable conditions appear; opposing influences prevail to frustrate earnest efforts or disappoint reasonable expectations.

A dentist's experience is exceedingly varied and beset with numberless difficulties, perplexities and trials. He may be ever so skilled in the dental art and possess the requisites that especially fit him for his calling, yet he cannot invariably overcome impending obstacles nor count on uniform or absolute success. No man is infallible, however he may boast, for infallibility is not a human attainment. Failures occur in all quarters and every mortal has a proportionate share of them. If individuals see not their own imperfections perhaps others do; yet occasional ill-success does not indicate absence of manipulative ability nor a total lack of talent or genius.

It is well to hesitate before condemning operations that our neighbors have performed, for it is possible that no better results would have followed had like tasks, under similar circumstances, been attempted within our own doors. Before hurling offensive missiles at others it may be well to consider if the fortifications erected for our own shelter are not citadels of glass.

It is unfair to judge harshly from a failure observed and to guage its author accordingly, for perhaps other operations from the same source might exhibit evidences of marked skill and sound judgment. Unfortunate it is that some individuals are too ready to pass unfavorable comment upon the works of others, especially if in the least degree faulty, without possessing sufficient generosity to credit them for achievements that are eminently successful and that bear the stamp of excellence.

It would almost seem as if in every trade or profession certain members imagine that the only possible way of gaining a reputation for themselves is in undermining the reputations of other members of their calling. In efforts to reach the goal of fame they would make stepping-stones of their fellows and do them injury at every tread. Sensible people, however, are not unlikely to distrust those who speak uncharitably of their compeers, and it frequently happens that ungenerous comments reflect unfavorably upon parties who utter them.

When dismissing our patients we are not always sure that they will return to us for future treatment. In the course of time many will get into other hands. Some remove to distant localities and find it inconvenient or impossible to come again; others by nature are inclined to wander and fond of making changes. Some change with a view to economy; others, perhaps, from lack of confidence or a fancied neglect. Some fail to return because bills for former operations remain unpaid, and such parties are usually ready to misrepresent or malign those whom they have defrauded. Many an excellent and faithful dentist has been declared the author of discreditable operations which he never performed. Many have been charged with having inserted fillings, with assertions that they soon after "fell out," in cavities that had never experienced the touch of a dental instrument. The decay and destruction of entire dentures resulting from sheer neglect and carelessness on the part of individuals who possessed them, are often charged as malpractice on the part of some dentist who perhaps simply introduced a single filling or removed beds of calculus and polished the stained surfaces of enamel.

"Your dentist has shamefully neglected your teeth and allowed them to go to destruction," remarked a New York dentist recently to a lady who, in an emergency, called upon him with a request that he would quiet the rebellious demonstrations of an aching bicuspid, which, however, he failed to accomplish. Could this person have known the history of the case he probably would not have ventured on so untruthful a statement. Fortunately in this instance the patient, knowing better the circumstance, rebuked him for the unjust insinuation.

To take for granted all that comes to our ears from disaffected or grumbling visitors is neither wise or just, and certainly fuel should not be added to the fire by sympathizing with their complaints or endorsing their scandal. There are various ways of doing injustice and injury to our neighbors even without charging them with incompetency or denouncing them as charlatans. A feigned look of astonishment when scrutinizing their work; a significant shrug of the shoulder or a disapproving shake of the head will have the effect of undoing confidence in the operations of their former dentists, and sometimes prove even more damaging than open denunciations. To ask if the Doctor was not in a hurry when he filled their teeth; if the Doctor himself performed the operations; if the

work was not done by the Doctor's student; if the Doctor's eye sight is not failing him, etc., are insinuations that excite suspicion and convey the idea that the operations referred to have been slighted. Nor does it make matters a bit smoother to add, in a semi-apologetic manner, that "the Doctor was considered a pretty fair sort of dentist *once*, but, unfortunately, he is getting old." All this is needless and generally uncalled for. It inflicts injury on those to whom such references are made and fills with distrust the minds of those who have received their attention. And, to sum up, no good whatever can result from such ungenerous criticisms.

The causes that tend to failures following dental operations are many, and when duly considered it seems a wonder that there are not more of them. Very many individuals defer their visits to the dentist until driven by dire necessity to seek relief from pain, and it is then found that their teeth are in a sad plight. Some cases present large approximal cavities or crowns so decalcified and broken down that reliable walls for retaining of fillings can hardly be secured. Exposed pulps, congested pulps, dead pulps, and alveolor abscesses also manifest their presence, and yet it is often expected that such dilapidated and diseased organs can be so restored that they will promise even better than before they became so wretchedly neglected and abused. People who are wilfully careless and negligent concerning the preservation of their organs of mastication are not entitled to a very great degree of sympathy if trouble ensues as a consequence. Some sufferers seem to obtain a little grim satisfaction if they can only saddle the responsibility of their mishaps upon others, and their dentist is, in some instances, a convenient scape goat on whom to work their saddle. When discontented parties come to us with their complaints it is clearly our duty to vindicate the good standing of our *confreres*, as the occasion offers, and at the same time remind our visitors that personal interest and vigilant care is requisite on their part if they expect to escape consequences that neglect is apt to engender.

A few days ago a letter came to me from Dr. Quimby, of Liverpool, in reply to a communication recently addressed to him concerning one of his patients who, when on a recent flying visit to this country, called on me for a little professional attention. The Doctor, in his letter, pictured the patient as a "bird of passage," who never thinks of treating his teeth to any sort of attention until just ready to start for some distant clime, then allowing such limited time for treatment that they cannot properly be cared for. Dr. Quimby adds: "There is no satisfaction in trying to do anything for men who do not take any interest in their teeth themselves—men who try to make a sort of father-confessor of their dentist, getting absolution from him once a year, and throwing all their sins of omission and commission on his shoulders." Here, gentlemen, you have a comprehensive essay in a few words, and from a fellow-practitioner whose utterances are noted for wisdom and sound sense; a gentleman of large experience, who well understands the difficulties

his fraternity have to contend with, and who is ready to sustain and defend them at every point.

And now, fellow-practitioners, let us do justice to our fellows, as we would wish justice done to ourselves, and may we never forget that professional courtesies of every character are much like "bread cast upon the waters," rewarding us with happy reflections and inducing a reciprocation of kindly courtesies with the hearty good will and esteem of our professional brothers.

THE PRESIDENT—Dr. Luckey, will you open the discussion of this paper?

DR. LUCKEY—Mr. President, if not called upon by yourself it would almost seem presumptuous in me to open the discussion of this paper, with so many older and more able men than myself present. The subject has been so thoroughly treated by Dr. Francis that there is really nothing to discuss. I think we will all agree with him in what he has said. It must be patent to all intelligent men that the utterance of innuendoes and disparaging remarks to patients of other operators who chance to come under our observation must of necessity work to the disadvantage of those who utter them, while honest, straight-forward criticism, giving credit where credit is due, would as certainly elevate us before such persons. Owing to surrounding conditions we do not *always* succeed in our operations as we might wish. For that reason I am inclined to give other operators the credit of doing their very best every time, unless it becomes apparent to me that they have been careless or negligent. When I find slovenly work I feel that it is time to talk plainly. If the reputation of an operator has not sufficient value in his own estimation to stimulate him to do his best, it certainly does not behoove other men to try to bolster that reputation up. The public have been paying him for his very best services, they are entitled to be so served, and if they are not common justice demands that the truth be made known to them. Professional etiquette is not so wide spreading as to be able to shelter under its cover all men calling themselves dentists. The line must be drawn at the point where conscientious endeavor ceases and careless, slovenly work commences.

DR. HAYHURST—The state of things spoken of in the paper exists not only in dentistry but in all other professions and spheres of life. It seems to be implanted in every human breast to do the best he can for himself, and this principle is sometimes carried to such an extent that the rights of others are disregarded. When this is the ruling principle of a man in our profession, the patients who fall into his hands are unfortunate, as well as his professional brethren. I think that one of the best things which an association of this kind could do would be to break up that kind of practice as far as possible, to caution each other, and to be careful to respect the rights of other members of the association and the profession.

At this juncture the floor was given to Dr. Herbst, who was interpreted by Dr. Bodecker. He said:

Mr. President and Gentlemen, I am very glad to have this opportunity to say a few words.

Gentlemen, Dr. Bonwill very kindly made me a present of his dental engine and mallet on condition that I shall practice with it and see what can be done, and this I promise to do. But gentlemen, I say here openly that if I had had the skill and the training that Dr. Atkinson, Dr. Bonwill, Dr. Brown, Dr. Webb. Dr. Varney, Dr. Bodecker, and others, I should never have attempted to invent my rotation method.

I know that by means of the electrical mallet and the Bonwill mechanical mallet you can achieve very great results. I have seen a patient of Dr. Bodecker who had several large fillings that were made with the Bonwill mechanical mallet, which were very beautiful. I do not know whether Dr. Bonwill or any other gentleman here has had the two methods used in his mouth, but I am sure that any one who has will have noticed a very marked difference in the sensation produced ; and I think we should consider the comfort of our patients as well as our own. Even if an operation could be performed with the mechanical mallet, or with the electrical mallet, in about the same time and with as little labor as it can be done by the rotation method, still the patients will be much better satisfied if they are subjected to less pain and annoyance; and you know the mallet always is a more or less disagreeable instrument to experience in the introduction of gold.

I accept the present of Dr. Bonwill with gratitude, and I shall esteem it very highly, especially as the gentleman from whom it comes is known in Germany and Europe as one of the most ingenious and skillful operators in his profession. Therefore, I again thank him for the present he has kindly made me. And again my very best thanks for what this Society has done for me, and the reception you have given me. I shall never forget the few days I have spent with you.

Dr. S. C. G. Watkins—Mr. President, Dr. Herbst has said that he would like to hear from some one who has experienced in his mouth both the Bonwill mallet and the Herbst rotary method. The first operation with a stone burnisher that was ever done in America, I believe, was done in my mouth, by Dr. Bodecker. It was the filling of a cavity in a wisdom tooth, which was very sensitive. The Doctor used different mallets, the Bonwill among others, and their effect was very unpleasant; but the rotary motion of this stone burnisher I never felt at all. There was no pain whatever from its use, but the effect of the mallets was terrible. It was a great relief to substitute the rotating blood-stone which Dr. Wheeler, of Albany, had made.

Since Dr. Herbst has been in this country, he has, it seems, absorbed the attention and thoughts of dentists through this section entirely. They have forgotten everyone else in honoring Dr. Herbst. But there is at least one other member of our profession

who deserves a great deal of credit for bringing this method to our attention, for bringing Dr. Herbst to this country, and exciting an interest that will doubtless lead to further experiments and improvements. I refer to Dr. Bodecker. I think this society ought to pass a vote of thanks to Dr. Bodecker for the great service he has rendered, and the trouble and expense he has had in bringing this matter to the attention of the profession. Therefore, Mr. President, I move you that this Society tender to Dr. Bodecker a vote of thanks, for the very great interest he has taken in bringing this matter before the profession.

The motion was carried unanimously.

Dr. Bodecker, in responding, said: Gentlemen, I am obliged for the sentiment you have expressed, but I believe it is the duty of every dental practitioner carefully to examine, and if found worthy, to adopt anything that may be of value to his brethren, wherever he finds it, and to preserve and present it to his professional brothers.

I saw this rotation method about two years ago, when it was very nearly on the eve of death. At that time I believed it to be a valuable invention, and that a great deal of good would come from it. So I tried my best to save it to the world. Whatever I have done has been, not for myself or any single individual, but with a view to benefit the dental profession at large.

In response to the remarks of Dr. Herbst, Dr. Bonwill said: Mr. President and Gentlemen, I wish to say that, in return for the gift which I have presented to Dr. Herbst, I have to thank him for a set of his instruments which he has so kindly tendered to me, and I promise him that I will, so far as I know how, use those instruments and test them thoroughly in introducing gold in the manner that he has done in our presence.

I have never doubted that gold could be impacted in this way. Any mechanic who ever saw a piece of tin or sheet iron spun up with a simple burnisher would know at once that the metal assumes a new character, and is capable of welding in that way.

While this method of introducing gold may possibly be much more pleasant to the patient, that is not the only point to be considered; diminishing the disagreeable sensation of the instrument is not the only way to save the patient and to eliminate human suffering. The saving of time also tends to that end, and is of great importance to the operator. While we consider the welfare of our patients, we must not forget ourselves. In reducing the time required for these operations three-fourths, I made a great advance in the way of saving time for the patient as well as the operator. This rotation method is the outgrowth of a keen, mechanical mind, mind, environed and stimulatd as his has been. I thank Dr. Herbst again for the set of instruments which he has presented to me, and which I will give a fair trial.

Dr. G. Carleton Brown then proposed Dr. William Herbst, of Bremen, Germany, for honorary membership in the Society.

Dr. Brown also proposed for honorary members Dr. William H.

Dwinelle, of New York, Dr. R. B. Winder, of Baltimore, and Dr. T. S. Walters, also of Baltimore.

On motion of Dr. Levy the nominations were referred to the appropriate committee, with instructions to report immediately. The Examining Board reported favorably upon the nominations. On motion the Secretary was authorized to cast the ballot in favor of the nominees, who were declared elected honorary members.

Dr. Geo. C. Brown offered a resolution that the Secretary edit and publish the proceedings of the last three years, and that the President appoint a committee of three to attend to the financial part of the business, solicit advertisements, etc.

The resolution was adopted.

The President appointed as a committee under the resolution, Drs. Palmer, Richards and Watkins.

On motion of Dr. Meeker, Dr. C. A. Timme was appointed a delegate to the Physicians, and Dentists Society, to be held in Berlin, September 17th to 24th, 1886.

Dr. C. W. F. Holbrook read an interesting paper on

BRIDGE AND GOLD CROWN WORK.

ILLUSTRATED BY MODELS.

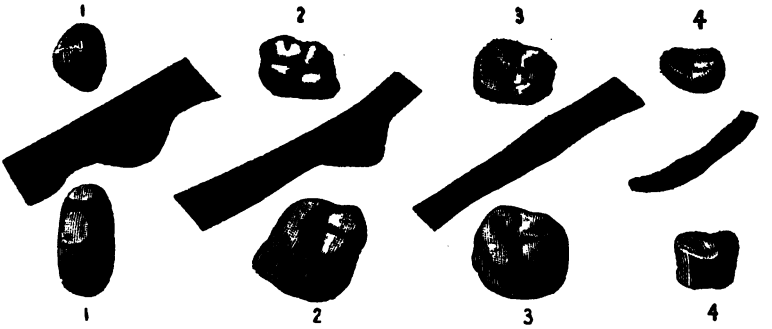
Mr. President and Gentlemen—Sometime since I was requested to read a paper before our Society relative to gold crown work. I cheerfully acceded to the request, not so much with the thought of presenting anything new, as from a sense of duty that every member should contribute his mite of experience to the annals of the Society. It is mainly through this source that new ideas are promulgated, and to the furtherance of which all should readily respond, even though brief, as on this occasion I shall be.

Nature has formed in its creatures a means of pleasure, health and life through the medium of teeth for the mastication of food. The gold crown is a factor in the restoration of that, which nature has provided for the important service of mastication, and with this factor are combined elegance, cleanliness and durability. Gold crown work is of a character, that in itself is most healthful and cleanly, while at the same time acknowledged to be the most difficult in manipulation and construction in the dental mechanical art, requiring as it does an extreme nicity of procedure to a perfect adaptation and articulation. In the profession, the methods employed to produce the same results, are numerous and varied.

My first attempt at gold crowns, made several years since, were most satisfactory, and produced very gratifying results, not alone to myself, but also in the delight and comfort given to my patients. The seamless crown was my chief ambition, but great difficulties arose in its adaptation. Crowns made in this manner necessitated innumerable dies to conform to the varying sizes and forms of

teeth; and notwithstanding the utmost care in the selection of crowns, cutting was always necessary, thus rendering them not wholly seamless. Or, perhaps, through a process of manipulation, there might be produced a seamless crown yet without symmetry, a result to me quite unsatisfactory, under the circumstances. I adopted a method not unknown nor unfrequently used by the profession, a nicely fitting band with flat top. I have since adopted another method, that of a swaged top, resembling closely the adjoining teeth. By my process, an impression is taken in plaster, using a half impression cup; the bite is taken in wax and the impression is treated in the usual manner. Hard cutting plaster is used, that it may not crumble. From the cast zinc dies are made by pressing the cast into sand. A cap is struck about half the depth of the crown. A nicely fitting band is made, to which is soldered the swaged cap representing cusps, as they ought to be, or presenting them as they are. This style, I have now in use, as it embodies the advantages of beauty, symmetry and perfect adaptation and articulation; and requires less grinding, a process which is always very objectionable and annoying to patients.

I brought with me a few specimens of gold crowns, as more fully illustrating the practical work of my method and for inspection of those who may desire.



It would seem useless for me, gentlemen, to enter upon a more minute *modus operandi* of making gold crowns; you have judgement and experience, and undoubtedly your efforts have been crowned, if not with gold, with success. In dentistry, there has been rapid strides, improvements have kept place with the age, all, the result or genius, a ready adaptation of means to an end, a desire, a longing to relieve, to benefit mankind. What is more akin to the comfort, the happiness of man, than the senses of the mouth? They enter into the very life of man. The profession know it, they feel it, and their life efforts are devoted to the preservation of those senses so dear to all. The gold crown is an emanation of that desire for improvement and is a new element in dentistry which contributes to the pleasure, the happiness, the benefit of our race.

DR. M. RYNEAR, of New York, followed with an address on

THE PAN AND PIN PROCESS

FOR APPLYING PORCELAIN TEETH TO THE ROOTS OF THE FRONT TEETH.

For some years past, but more particularly for the past three years, since my retirement from the practice of dentistry, and while employed in the manufacture of gold crowns for molar and bicuspid teeth, I have given close study to the different methods which have been brought forward from time to time for applying porcelain crowns to the roots of front teeth.

The conclusion I have arrived at is this, that the two methods which were most deserving of our consideration, were those having a band as an additional support to the pin, for by these methods we were enabled to get any variety of expression, while at the same time we obtain a firm attachment to both the root and to the crown. Nevertheless these will never be popular. The chief objection is the band, which is not alone very difficult to construct; but is extremely painful to the patient while being fitted and applied. When bands are allowed to cover the cementum, they necessarily distend the mucus membrane beneath which they are made to pass. On the front teeth this is exceedingly injurious, as, in the process of incising the mocus membrane being loosened from its natural attachment to the root is soon wasted by abrasion.

By the Buttner method, which also has a band, this defect has been overcome; but, unfortunately, this is accomplished by the loss of a considerable portion of the cementum, which naturally lessens the vitality of the root, and weakens that portion on which the crown is expected mainly to depend for its support. In fact, all the existing methods up to the present time depend wholly upon the pin for support which is not sufficient, and even when additional support is given it results in the immediate loss of a considerable part of the cementum or the gradual destruction of the mucus membrane surrounding the neck of the tooth.

What we need is some method for attaching porcelain crowns to the roots of front teeth, which can be easily and readily applied without injury to the cementum or mucus membrane. It should not be limited in its application, and when once completed the connection must be perfect, no movement being possible. This is a simple mechanical problem, the answer to which we will doubtless find based upon some scientific mechanical principle.

I will now endeavor to explain a method which I have lately devised, and which I trust will meet the desired requirements. We have two instruments intended for the dental engine, one a twist drill, the other a reamer similar to those used by Buttner. These instruments are to be made of definite sizes. Three of each will doubtless be sufficient, to be numbered according to size, 1, 2, 3. We

have a gold platinum pin, the head of which if the exact size of the drill, the body of the pin being somewhat smaller than the head, and about one half inch in length. These pins are also numbered 1, 2, and 3, to correspond with the drills. We have a gold or platinum pan with a small hole through the bottom, the pan itself being riveted to a thin plate of platinum egg-shaped, about one-third of an inch across its greatest length. These pans, which are made to correspond in size with the reamer, are also numbered 1, 2, and 3. It is intended to manufacture these several different devices, and to place them for sale so that they may readily be obtained.

We will now proceed to apply a crown by this new method. The root is first brought to a perfectly even surface with the gum, and a drill is selected with which we cut well up into the pulp canal. We next proceed by selecting a reamer. To do this we place the center pin, with which each reamer is provided, in the hole made by the drill in the pulp canal, and observe the comparative size of its diameter with that of the root, which should be at least one-third greater than that of the reamer. Having selected and adjusted our reamer to the dental engine, we now ream into the dentine to a depth of about one-thirty-second of an inch. A shoulder on this instrument will indicate when this depth is reached, as it effectually prevents the reamer from cutting deeper.

You will now observe we have constructed within the tooth a hollow space, a sectional view of which would present the appearance of an inverted T, it being larger at the cervical wall than it is towards the apex of the root.

For the purpose of illustration we will presume in this work we have used No. 2 drill and No. 2 reamer. Now having provided ourselves with pins and pans of this number we proceed by placing the pin head forward, as far as it will reach into the root. No force will be required to do this, as in the manufacture of the pin care is taken to have the head exact in size to correspond with the hole made by the drill, without being tight, however. It will be found that we have a perfect bearing near the apex of the root, at the point where the head of the pin is placed, and that the shank of the pin which projects somewhat below the gum, stands some distance away from the walls of the canal. The pan is now placed into the hole made by the reamer, the projecting portion of the pin being made to pass through the small hole in the bottom of the pan.

No difficulty will be found in adjusting these pans for the same reason as explained in reference to the pin. We now have in the interior of the root two perfect bearings, one at the cervical wall, the other near the apex, while externally there extends a thin plate of platinum covering the surface of the root, and the pin, which possibly projects one fourth of an inch.

With wax we now attach the projecting portion of the pin to the pan, and remove from the root both the pan and the pin; this we imbed in plaster and sand, the head of the pin downward. On the plaster becoming sufficiently hard the wax is removed, and with 20 carat solder we permanently connect the pan and pin, while at

the same time we anneal the platinum plate making it quite soft and pliable. The pan and pin now being united, they are again placed within the root and the platinum plate, around the pan is carefully burnished against the bottom of the root, and trimmed off to conform exactly with the periphery of the root, or to extend a little beyond, so that the edge may be burnished over and against the surface of the cementum. Having properly adjusted this appliance we now back a plate tooth with platinum or gold, and grind and fit it, and after securing it with wax in its proper position carefully remove the entire apparatus, and after investing it in plaster and sand we then complete the work by soldering the tooth to the bottom of the pan.

To those who may be disinclined to use a blow-pipe, and are opposed to constructing the crown in the manner described, I desire to state that after soldering the pan to the pin an impression may be taken of the mouth, which when removed will be found to contain a well defined outline of the bottom of the pan, and a deep impression of the exposed portion of the pin. By placing the pan and pin in its proper position on this impression a plaster model can be made upon which a Bonwill, Foster, How or any of the crowns to be had at the dental depots can be attached. The advantage being that this work can be done away from the mouth, thereby overcoming the possibility of the cements with which they may be attached, being disturbed while hardening. Or after the pan and pin have been connected, this appliance can be permanently attached to the root, either with gutta-percha or cement, and any of the above crowns may then be fitted and adjusted directly to the mouth. In attaching the crown permanently to the root, it is recommended to use gutta-percha, for the reason that at any time afterward, the crown can be removed by simply heating the points of a pair of pinchers and placing them upon the tooth, thereby warming the gutta-percha, and enabling the easy displacement of the crown.

The process of attaching the crown to the root is a simple one. Gutta-percha is placed upon the pin, and after being properly warmed the crown is at once applied. Care should be taken to allow no gutta-percha or cement (if cements are used) to come in contact either with the head of the pin or with the outer surface of the pan, as these are absolute bearings and any foreign substance at these points will prevent the crown from going to its proper place. Should any difficulty be found in bringing the crown into close connection with the root, this will be caused by an excess of gutta-percha. In such a case, the crown should be immediately withdrawn, and after removing the excess it should be again heated and permanently adjusted.

This system presents the following features, which recommend it to the consideration of the profession. It is based upon scientific mechanical principles, the pins and pans being manufactured so as to correspond exactly with the drills and reamers, which are also manufactured. The pins and pans secure within the tooth two per-

fect bearings, one at the cervical wall and the other near the apex, thus preventing any lateral movement. We obtain a firm foundation upon which any of the teeth to be had at the dental depots can be attached—even continuous gum teeth, when platinum pins and pans are used. The cement with which the crown is held in place is protected by the pan which hermetically seals it within the root. It is not limited in its application, and is adaptable to any variety of color and expression. The operation is absolutely painless, and the crown can be readily removed by the operator at any time without injury to the root or crown. It necessitates the loss of the least possible amount of tooth structure; and, the pins and pans being manufactured, requires the least expenditure of time on the part of the dentist.

At the conclusion of Dr. Rynear's paper the newly elected officers were inducted in their positions, with remarks suitable to the occasion.

The Secretary offered a vote of thanks to the retiring officers and to the gentlemen who had contributed by clinics and exhibitions to make the sessions a success; also to Mrs. Coleman, the hostess of the hotel.

Upon motion the convention adjourned *sine die.*

CHARLES A. MEEKER, *Secretary.*

A CLINIC WAS GIVEN ON THE 23D, BY DR. HERBST.

Dr. Herbst lined some cavities with gold for filling with amalagm, in the following manner: A large cylinder of Wolrab's gold was compressed between the fingers and dipped into a very thin solution of gum-copal in sulphuric ether, which is used for the purpose of preventing the mercury of the amalgam from uniting with the gold. When this compressed cylinder has been moistened with the liquid, the surplus is pressed out with the fingers, the ether allowed to evaporate, and then by means of a piece of cotton, the gold is pressed against the labial wall of the cavity in the tooth to be filled with amalgam. The gold in this manner can be thoroughly condensed by means of a rotating burnisher in the engine, and will not alter the shape of the cavity. When ordinary round undercuts have been made. the amalgam will be held in position without any trouble. Dr. Herbst exhibited many teeth which had been filled in this way, several months ago, and showed no signs of discoloration, but presented the most natural appearance, although their labial walls were very thin, so much so that the gold was visible through the enamel. He then explained the making of instruments, matrices and other appliances, such as were exhibited in the trays of his cabinet.

Dinner to Dr. Herbst.

On the evening of Tuesday, the 22d, certain members of the Society gave a dinner in honor of Dr. Wilhelm Herbst and other distinguished visitors. Dr. Fred A. Levy occupied the chair. The dinner was given at the Coleman House, and was a brilliant success in every respect. Upon the back of an elaborate *menu* appeared a large letter H, an exact copy of the arrangement of the table, with the names printed in the positions occupied by everyone present, as per opposite page.

Dr. Fred A. Levy asked all the gentlemen to rise and drink to the health of Dr. Wm. Herbst.

Dr. Herbst answered in German, which was translated by Dr. C. F. W. Bodecker. He thanked the Society for the unexpected acknowledgment, but more particularly for the great interest manifested at the clinic, which, as he remarked, gave him more pleasure than anything else.

Dr. Levy then proposed a toast to the dental profession at large, and called upon Dr. Wm. H. Dwinelle to respond.

Dr. Dwinelle spoke at some length, highly complimenting Dr. Herbst, and concluded his remarks by speaking of the dignity of the profession. The chairman then proposed a toast to the dentists of New York, and called upon Dr. N. W. Kingsley.

Dr. Kingsley responded, and in concluding his remarks called attention to the fact that that day, the 22d of July, was the sixtieth birthday of Dr. Wm. H. Dwinelle, the annoucement being received with great applause.

The chairman then proposed the health of the dentists of Pennsylvania, and called upon Dr. E. T. Darby.

Dr. Darby spoke in a very complimentary way of Dr. Herbst, and hoped that when he returned he would feel that he had the good wishes of every American dentist, as he had been treated here like a professional brother. Dr. Darby then expressed the hope that the dentists of Germany would recognize the fact that the dental profession of this country has recognized in Dr. Herbst a gentlemen of modesty, and a genius. (Cheers.) Dr. Darby then spoke of the dentists of Pennsylvania, and especially of Philadelphia, in connection with dental education.

Dr. Levy then proposed the health of the dentists of Maryland, and called upon Dr. R. B. Winder.

Dr. Winder, in his remarks, endorsed all that had been said by

Worthington Pinney

E. T. Darby
Geo. C. Brown
W. H. Dwinelle
W. E. Hoag
C. W. Meloney
R. F. Hunt
G. Carleton Brown
R. B. Winder
H. L. Clark
N. W. Kingsley
A. R. Eaton
W. W. Walker
A. L. Northrup

Fred. A. Levy

Wilhelm Herbst

C. F. W. Bodecker
C. A. Meeker
N. Williamson
J. W. Scarborough
J. B. Littig
James Truman
S. Lloyd
L. S. Marsh
P. J. Wilson
W. G. A. Bonwill

E. P. Brown
J. E. Jacquette
H. A. Hull
D. W. Craig
J. W. Noble
O. E. Peck
S. C. G. Watkins
H. Iredell
Oscar Adelberg
C. W. Holbrook
R. V. Jenks
T. J. Thomas
J. V. Reuling
H. M. Lewis
C. A. Timme
O. E. Hill
C. E. Francis

W. H. Atkinson
J. Hayhurst
Frank Abbott
B. F. Luckey
T. S. Waters
George E. Adams
P. A. Hull
I. N. Van De Water
F. M. Odell
Edward Goertz
A. S. Burton
W. P. Richards
H. A. Parr

James G. Palmer

Dr. Darby in regard to Dr. Herbst, and then spoke of Baltimore as the cradle of dental education, mentioning at some length the difficulties which Dr. Chapin A. Harris had to encounter,

The chairman then proposed a toast to the dentists of Philadelphia, and called upon Dr. James Truman.

Dr. Truman congratulated the Society upon the great success of the evening, and remarked that all he could say to Dr. Herbst he had expressed a few evenings since, at a dinner given him by the dentists of Philadelphia.

The chairman then called upon Dr. O. E. Hill to speak for the dentists of Brooklyn.

Dr. Hill, after responding to the toast, said he was glad that there was such a country as Germany, to produce such a genius as she has sent to us, and he therefore proposed a toast to the dentists of Germany.

Dr. Herbst again thanked the Society for the honors shown him, but remarked that he would regard them as compliments paid to professional friends in his own country. He then remarked that formerly dental education in Germany had been very much neglected. A dental student was required to study two years in a college where everything is taught, *except dentistry*. He remarked that he had graduated under the same curriculum, and when he passed his examination, graduated with honor, but he had, up to that time, not known how a gold filling was inserted in the cavity of a tooth. After that he settled in Bremen, and bought all the latest American instruments, but was unable to make any use of them. When he saw the beautiful work which from time to time came to him from this country, he was stimulated to produce like results in any way he could. He knew the American proverb, "Help yourself," and out of his strugles the rotary method came into existence. He freely declared that if he had known how to insert a filling by the American system, he would never have thought to experiment in this direction, and he is of the opinion that his method in the hands of American dentists would soon be brought to great perfection.

The chairman then proposed a toast to the rising generation of dentists, and called upon Dr. W. W. Walker.

Dr. Walker was pleased to pay homage to Dr. Herbst and his baby (the rotation method), and very glad that had been elected an honorary member of the NewYork State Dental Society.

The chairman then proposed a toast to honorary members of the Society, and called upon Dr. Bonwill.

Dr. W. G. A. Bonwill, after saying a few words in response to the toast, remarked that he was glad to see that the Americans honored a foreigner in this way. He regarded Dr. Herbst as a mechanical genius, and he had met only very few of them in the dental profession. In speaking of his method, Dr. Bonwill could not say whether the invention was valuable or not, until he had tried it. From what he had seen he was very favorably impressed, although the method was in direct opposition to his system of operating,

but whether the new method would be universally adopted or not it was impossible to say. He then presented Dr. Herbst with one of his dental and surgical engines and mechanical mallet, under the condition that Dr. Herbst will give it as faithful a trial as he himself would the new method.

The chairman then proposed a toast to the New Jersey State Dental Society, and called upon Dr. Hayhurst.

Dr. Hayhurst at some length described the good work which, during the sixteen years of its existence, had been done by the Society, and was glad that it had welcomed Dr. Herbst in so cordial a manner.

The chairman the proposed a toast to the other distinguished guests, and called upon Dr. Atkinson.

Dr. Wm. H. Atkinson had heard of Dr. Herbst first through Dr. Bodecker, whose judgment he highly respected, but he had withheld his judgment until he had an operation performed in his own mouth, and by which the truth was revealed to him that the Herbst method stands *par excellence* as the exponent of the law of the adaptation of the gold to the walls of a cavity.

The chairman then expressed the hopes that the society might see all the faces again next year, to which Dr. Wm. H. Dwinelle responded, principally confining his remarks to honorable dental practitioners who had passed away, but whose names will live forever. In this connection he mentioned Chapin A. Harris, Elisha Townsend, E. B. Gardette, Eleazer Parmly, Solyman Brown, Jehiel Parmly, and others, after which the meeting adjourned.

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SOUVENIR

OF

THE DINNER

TENDERED TO

Dr. WILHELM HERBST,

OF BREMEN, GERMANY,

BY

The New Jersey State Dental Society,

JULY, 1886.

NEWARK, N. J.:
THE ADVERTISER PRINTING HOUSE,
1886.

THE PROCEEDINGS.

DR. FRED A. LEYY (Chairman)—Gentlemen, I ask your attention for a few moments. We are gathered together this evening around this jovial board for the purpose of paying our respects to a gentleman who has come a long distance to see us, also to many other friends from nearer home. As the hour waxes late I will, without more ado, propose the health of Dr. Herbst. (Drank standing.)

DR. WILHELM HERBST (interpreted by Dr. C. F. W. Bodecker)—Mr. President and gentlemen of the New Jersey State Dental Society, for your very kind invitation to meet with you here, which I received in Bremen, I hereby tender my very heartiest thanks. I was not aware that there were any more of these very kind acknowledgments which have been given me, in store for me to-night. Gentlemen, if you had not given me this very gratifying reception here to-night I would not have thought anything of it whatever. On the contrary I would have been more than satisfied, for I saw there was a great deal of interest taken in the method which I demonstrated before you, and this alone is what satisfies me more than anything else. Therefore, again, gentlemen, my very heartiest thanks for the kindness you have shown towards me, and I only hope you will give me a few minutes to-morrow morning to show you some things which are on the programme and which I have not been able to demonstrate to-day. I would like to show you the lining of cavities with gold for the reception of amalgam fillings, if time permits.

THE CHAIRMAN—Gentlemen, I desire you now to drink to the health of the profession at large, and I will call upon Dr. Dwinelle to respond.

DR. W. H. DWINELLE—Mr. Chairman and gentlemen, I think it is a little ungenerous to call upon me at this early stage of our

meeting for a speech, for you know I am not in the habit of speaking; I think you will all bear witness that this is the first time I ever attempted to make a speech! Nevertheless you have me committed and I must needs say something.

The first thing in order is to pay our respects and compliments to our friend Herbst, who has come three or four thousand miles to do us good. How much he will do the future alone can tell. Certainly he has come to us with the best possible intentions, and we receive him upon that plane. That he is honest, that he is a man of genius, that he comes to us as a missionary in this barren land, comparatively speaking, we cheerfully admit; we welcome him here to-night and extend to him the right hand of fellowship; that we shall adopt his methods is for the future to decide. At any rate we may safely assume this, that they will supplement and modify our methods of using gold, whether we adopt them as a whole or not. He comes to us at great sacrifices and with most generous intentions. He is ready to lay at our feet the fruits of his labors and the inspiration of his genius, and we must acknowledge it, which we do with all our heart; and we trust that when he returns to the fatherland he will do so with a better idea of the advances that have been made in our profession than he ever had before. Certainly I think he will regard us as friends and not foes, as he had reason to suppose from the opposition and persecution he has suffered in his own land. He goes back to his home with something like an endorsement from us, which we trust will be some compensation for the ills that he has suffered heretofore.

Gentlemen, so many reminiscences loom up before my mind here to-night on this festive occasion, that I hardly know where to begin, but let my theme be, "the dignity of our profession." To-night I see the fruition of hopes that I expressed publicly on several occasions more than forty years ago. I predicted then that the time would come when we would be recognized as a profession, pure and simple, before the world. I claimed then that we were pursuing a profession that ultimately would be recognized for its dignity, its strength, its fullness and honor. A profession of dentistry, distinct and independent, not a specialty of medicine or any other calling. I predicted many things for it at that time, and said that it would be recognized as equal to any of the other professions in its benefi-

cent utility, because it had the advantage that its resources embraced nearly all of the arts and sciences. I predicted that it would not be excelled by any other profession in its approximation to that of an exact science. A body of men who would be distinguished as artists and scientists, as inventors and mechanics, abundant in resources and skilful in manipulation. Ours would be a profession learned in the arts, all-embracing in its reach, making the winds and the waters, the elements and all the forces of nature, everything that can contribute to the progress and elevation of man, tributary to it. What calling is more beneficent and ennobling than ours ?

We have recognized that the mouth was practically, as well as figuratively, the very doorway of life; that here preparation for nutrition and elementary vitality began, and that what was appropriate and properly manipulated here, through the processes of mastication, comminution, masceration and insalivation, would subsequently be assimilated into cell-building and, progressively, into man, brain, mind, and soul-building to its highest normality. We stand as sentinels and watchmen at this sacred portal, to guard and to defend, in the light of all the errors of the past, and the inspirations and teachings of the hour, to help physical, mental, moral, and, with it, spiritual humanity, upon her feet again, to her loftier and lost standard. What more exalted and dignified profession than ours ?

It has been said that the longevity of our race has been increased at least a decade within the last fifty years. I claim, gentlemen, and I utter a sentiment which will hardly be disputed, I claim that our profession has had more to do with increasing the longevity of our immediate race and people than any other. What more elevated and dignified calling than ours ?

On a public occasion over thirty years ago, claiming high honor and dignity for our profession, among other things I said :

> 'Tis yours to beautify
> And yours to bless. To assuage the stinging throe
> Of pain; bid suffering cease, and pour the oil
> Of comfort into many wounds. The lost
> To restore, deformity to raise up from
> Her humble path obscure, that she, with smiles
> May take her unaccustomed place among
> The sons of men. I charge ye that to you

The noble boon is given, to model o'er
The human face divine, on which
The signet seal of heaven hath fixed her impress true.
Be cautious then, nor e'er with careless and
Indifferent hand, abuse thy honored trust.

THE CHAIRMAN—Gentlemen, with this toast I shall expect you to empty your glasses to the dentists of the State of New York. We will drink it standing; and I will call on Dr. Kingsley to reply.

DR. N. W. KINGSLEY—Mr. Chairman and Gentlemen, This is not exactly fair. Sitting here at my left is Prof. Winder, who said to me not a minute ago, "Is this one of the affairs where a man is liable to be called on without a moment's warning?" and I said to the professor, "It's a blamed mean affair if it is."

I do know something about the dentists of New York. But let me say first that I have a little difference to settle with my friend Dwinelle. It was the most brilliant speech I ever heard him make. But with the exception of that last quotation, which is his own, that speech was my speech. That poem is original I admit. That is something he wrote about a hundred and fifty years ago, and delivered before the Baltimore College of Dental Surgery in an address to the students. It was splendid then and is splendid now although it is a "chestnut." But that he should get ahead of me and deliver my speech is taking all the wind out of my sails. He and I have been together for the last week. We went in swimming together this afternoon, and while we were there in the water, I was saying over all those things that he has fired off here. I have learned by experience that on such jovial occasions—I believe the Chairman called it jovial; I should have said festive, but jovial is good—it has been my experience that on these jovial occasions I am liable to be called upon, on the general principle that a man is any time in danger of getting hung. So as we were down there in the water, Dwinelle on one side of a breaker and I on the other side, I was working away at that speech; but had no suspicion that he was going to trot it in in advance of me to-night. It is just like him. He always did get ahead of me. He got ahead of me in being a poet when he wrote that address to the students. That would have been my piece of poetry if I had been antediluvian enough. But I am not. I am a young man, gentlemen.

Let me see; I believe the toast I rose to speak to was "The Dentists of New York." You know that no man is responsible for what he may say in an after dinner speech on a "jovial" occasion like this. I belong to a club in New York city that meets once a month and dines. It is a highly disreputable club. We sit thirteen at a table. That is another grudge I have against Dwinelle; he introduced me there. I never could have been a member but for Dwinelle. The first time I went there he paid for my dinner and that reconciled me. That club makes it a rule to work off thirteen toasts at every meeting, and every man named must reply to a toast; and any man who will say anything that has any reference to the toast is fired out right away. That is a habit I have got into, so you must not expect me to say anything about the dentists of New York. But I would like to say something about the dentists of New Jersey. This is the first time I have ever attended a meeting of their State Dental Society. I promised them year after year that I would, but they found that I lied. This year I said I would not come, and here I am. But, gentlemen, I have been delighted to meet with the New Jersey State Dental Society, what there is of it. I am sorry that the rest of it has gone to Europe. [Great laughter.] Now if he had not gone he would have had lots more fun here monkeying around home than he will have monkeying around the crowned heads over there.

I remember now that the toast was "The Dentists of the State of New York." Well, they are a high-toned lot, every one of them. If you look around here you can pick them out; you can tell them by their mugwump appearance. As it happens, I am at the present moment President of the State Dental Society of New York. Gentlemen, I have seen wonderful things exhibited here before the State Dental Society of New Jersey, but at our next meeting at Albany we are going to have the biggest thing that you ever saw in your life. We are going to have the grandest meeting that ever was held on earth. I invite you, every single one of you, to come, and I promise that the programme shall be carried out. If you will come we will show you a grand capitol building that cost a hundred millions, and is not finished yet. Besides, they are erecting another building for our special use, and we are going to meet in the finest hall you have ever seen. We have got a grand

scheme laid out in the way of a programme, and one that will interest you all. I cannot tell you what it is; I don't want to give that snap away. Let me tell you, in passing, that as President, it devolves upon me to name my cabinet of spiritual advisers, and my first nomination will be our friend Dr. Walker here, to be grand bouncer for the State. If he is not a spiritual adviser, where will you find one? His duty will be if he finds anyone practicing dentistry illegally in the State to catch them where he can get the best hold, and throw them clear over the State of New Jersey into the Atlantic ocean. He can do it.

Gentlemen, I know that I am detaining you too long, but I really want that you should come to Albany on the 11th and 12th of May next, and we will reciprocate some of your kind attentions. In closing my remarks I want to call attention to another matter. This is the 22d of July. The New Jersey State Society meets on the 22d day of July. I want to tell you of another little trick that my friend Dwinelle has played. He was born on the 22d of July on purpose so that he could come here with the New Jersey State Dental Society and celebrate it. That is a fact, gentlemen. Let us all rise and drink to his health.

Dr. Dwinelle—Sixty years, gentlemen, to-day.

[The company here sang "He's a jolly good fellow, which nobody can deny."]

The Chairman—Gentlemen, Dr. Kingsley has appointed Dr. Walker as bouncer for the New York State Society. If we should be so unfortunate as to be bounced from New York, we would have to go to Pennsylvania; therefore I propose the health of the dentists of Pennsylvania, and I will call upon Dr. Darby.

Dr. E. T. Darby—I had supposed that Dr. Kingsley was drawing upon his imagination when he said he had not been notified that he was going to be called upon. That speech of his was all cut and dried. But here I am left entirely in the lurch. I have not heard anything about it.

We are here, gentlemen, as I understand it, to do honor to our distinguished guest from abroad. That should always take precedence and be paramount in our minds, as he is paramount in our hearts. He comes to us from his own country, where he has almost been persecuted. Instead of persecuting him we admire and honor

him. We respect him for his earnestness and his modesty; we respect him for coming among us as he has to show us his inventions and to teach us a method which has absorbed his whole being of late. I am sure that when Dr. Hurst goes back to his native country there will follow him a very good name for American dentists. He will go back to his own country feeling that he has been treated as a professional brother; and I trust that his professional brethren at home will recognize the fact that we have recognized in him a gentlemen of earnestness, a gentleman of modesty, and a gentleman of worth. [Cheers.]

I do not know that I can say very much for the dentists of my own State. The truth is that I am not a native of Pennsylvania. Dr. Kingsley has spoken for my native State. I am an adopted son of the Quaker City, an adopted son of Pennsylvania; but I love to remember that city and that State, and I love the dentists in that State. They took hold of me when I was a boy, and have treated me very kindly. I have found in Pennsylvania a great many warm hearts. And you, gentlemen, have found a great many warm-hearted dentists in Pennsylvania who come over into your State, where they are so generously entertained.

We try to do something in the way of educating dentists over in the Quaker City; and I have seen to-day, and I see among those who are before me to-night, gentlemen whom it has been my pleasure as well as my privilege to have done something for in the way of teaching the art of dentistry. Some of the men whom it has been my pleasure and privilege to teach, and whom we considered good men at our institution, have located in New Jersey, and are, I am proud to say, doing good work, not only in their State society, but in their private practice.

I am very glad, gentlemen, to be with you to-night. Although I did not expect to be called upon, I am very glad to add my testimony to that which has already been given, to the whole-souled character of the dentists of New Jersey.

THE CHAIRMAN—Gentlemen, I remember that the last time I was in Washington I saw in the Capitol a picture bearing a legend something like this: "Westward the star of the empire wends its way." In this case it is a little different; it is southward; therefore I would propose the health of the dentists of Maryland, and call upon Dr. Winder.

Dr. R. B. Winder—Mr. Chairman and gentlemen, this is the unkindest cut of all, because I have been assured that I would not be called upon. I have been deceived and ensnared. I have not had a moment for reflection; but in war as in peace we have to meet things as they occur and do the best we can.

The sentiments that Dr. Darby has expressed regarding our honored guest here, I heartily reiterate. The State of Maryland has other representatives here, and I had hoped that I would be excused from speaking for them; especially as I am in the same position as Dr. Darby, Maryland being my adopted and not my native State. Virginia is my native State. But in regard to the influence of Maryland upon the dental profession, I think I would have the right to claim for her, as my adopted State, a good deal. No matter what rank may be accorded to us in the dental profession now, we can claim, and the claim will I think not be disputed, that Baltimore was the cradle of our profession. It was born there, forty-seven years ago. Through the ability and the long-sightedness of one man, Chapin A. Harris. [Cheers.] A man who at that time saw the necessity for what we are to-day, and laid the ground work for it. He organized a school there, and dentistry was from that moment changed from a trade into a profession.

One of our most eminent surgeons in the city of Baltimore, Dr. Christopher Johnson, while riding with me in a street car in the city of Baltimore not long ago, spoke of the great difficulties that Chapin Harris had passed through in organizing that school, and he said that if any man on the face of this earth, or any departed spirit from this earth, deserved a high seat in the eternal city, that no one could claim a higher position than Chapin A. Harris. That testimony was from a gentleman of the medical profession, a sister profession to our own, and one who was for a time a professor in that school and a co-worker with Dr. Harris. Dr. Harris had no means to carry on his enterprise, or assistance, except from two or three that he afterwards interested in this grand work. He appealed to the medical schools of Baltimore and Philadelphia for help, but without avail. He saw that there was a necessity for the establishment of a dental school and he determined that it should be done, and he did organize that school. You are as familiar with the rest of it as I am. You know how that undertaking has since been de-

veloped into a great and indispensable profession, and that out of that very movement grew the possibility of this meeting to-night. We would have had no convention here, we would have had no State Society, nor any of the privileges and honors which, as a profession, we are enjoying to-day, except through his earnest efforts and strong will. Therefore I do claim for Baltimore and, as a part of Maryland, for the State, that no matter how far she may have been eclipsed in later days, she is our birthplace and our heritage as a profession, and that the source of all professional dignity and honor was in the genius and the courage and the earnest labor of Chapin A. Harris.

THE CHAIRMAN—Gentlemen, on my way back from the South I got in the wrong sleeper and found myself in Philadelphia. I would like you to drink to the dentists of Philadelphia, and I call on Dr. Truman.

DR. JAMES TRUMAN—Mr. Chairman, it is rather late in the evening, almost quarter past twelve, and we ought to have some sympathy for our good helpers, who have done so much to add to our enjoyment, and not keep them up.

I remember that I have had the privilege of being pretty well warmed up on two occasions in connection with this Association. On one occasion I was very warm, and perhaps some of you may remember it, at Mount Holly. And I feel a good deal warmed up to-night, not only by the general heat, but also by mingling with the gentlemen of this Association. I must congratulate the members of the New Jersey Dental Association upon the great success of this meeting over any of those that I have heretofore attended.

Now, I do not know what to say about the dentists of Philadelphia. They can speak for themselves. But I do know that they have shared in the work of the profession and, I think, have aided very materially in its progress. We do not profess to be any better than our neighbors in other parts of the United States, but we believe that the work which has been done there has aided considerably in the progress of dentistry. And I was reminded of the old generation of men who preceded us when Dr. Dwinelle got up to-night. As a boy, almost, he stood in the first ranks of the profession along with Johnson, Westcott and others, and it seemed to carry me away back to the early days of Philadelphia dentists and the dentists of this country.

I do not want to say anything more in regard to the dentists of Philadelphia, and I do not know that I need to say anything more in reference to our stranger guest from Germany, because only a few nights ago I had the pleasure of welcoming him in Philadelphia, and I think I said on that occasion all that was necessary to be said for Philadelphia. I thank you sincerely, gentlemen of the New Jersey State Association, for the privilege of being present this evening.

THE CHAIRMAN—Gentlemen, while on that journey that I spoke of I attended in Baltimore a meeting of the Alumni of the College, and we had quite a hearty supper, and as there were quite a number of toasts, you will excuse me and make allowances for the fact, that when we started northward we did not pay the strictest attention to the schedule and followed a somewhat devious course. After being left at Philadelphia we took another train and got as far as Jersey City, where, through some mistake, we found ourselves on the Annex boat and were landed in Brooklyn. Now that we are there I will call on Dr. Hill to speak for the dentists of Brooklyn.

DR. O. E. HILL—Mr. Chairman and gentlemen, I can say this, that we are glad to have the New Jersey dentists come to Brooklyn, and we are always happy to receive them. One thing is certain, we never could receive them more hospitably than the Brooklyn dentists have been received by the New Jersey State Dental Society. Gentlemen, I really think I am living in a very happy time, and I feel glad indeed that there is such a country as Germany, and above everything else I am glad for the reason that six or eight times within the last three or four weeks I have been just chock, brimfull of good wine, all because a gentleman has come over here from Germany. And you who know me know very well that on these occasions I drink wine with every fellow all round the table, and then I am sure to be called upon late in the evening to respond to some toast.

I believe that it has been understood, in a general sense, that American dentists abroad have been superior to all others, but the American dentists to-day, and for the past month, have been paying respect and honor to a dentist from Germany. He has presented to us his ideas and the ingenius contrivances which he has produced; he has taught us very much and we have tried to receive him kindly

and hospitably. Again, gentlemen, I am really glad that there is such a country as Germany, because, as I told you, during the last three or four weeks I have been six or eight times chock, brimfull of wine, which would not have happened if there had not been such a country as Germany to produce such a genius as she has sent over to enlighten us. Gentlemen, I propose that we drink to the dentists of Germany, to the genius they have sent over here to us, and to the ideas which we have gathered from him.

Dr. Herbst (interpreted by Dr. Bodecker)—Honored gentlemen, I again thank you very much for the honor you have conferred upon me, but I do not take the honor upon myself; I will regard this as a compliment and honor paid to my professional friends and brothers in my own country, namely, Germany.

Our curriculum of study in Germany has been exceedingly defective in the department of dentistry. A dental student was required to study two years in a college where everything else has been taught except dentistry. Gentlemen, I graduated, according to the ideas in Germany, with a very good standing and well qualified, but when I did graduate I had never seen up to that time how a gold filling was inserted into a tooth. After getting through with my college education I settled down in the small town of Bremen, where, as many of you probably know, there are a number of your countrymen, who have some very beautiful work in their mouths, and all of those gentlemen of course looked with great suspicion upon a German dentist. For the reason I have mentioned, gentlemen, you can see that a dentist in Germany may study ten years without being able to compete in technical ability with a gentleman of this country who has attended a college for only one course. You can readily comprehend, gentlemen, that when I went into practice and saw the work that had been done by your countrymen, the American dentists, I was astonished, and I felt that I was absolutely unable to do any such work, although I knew I was in mechanical skill equal, or perhaps, in some respects, superior to the German dentists in my vicinity. Gentlemen, I was ashamed, so to say, to go to another dentist and ask him how to make a gold filling, for I had studied dentistry, had just graduated at a college and had a diploma. I could say that I was a dentist, yet I knew that I could not do the work that I saw in the mouths of your countrymen, al-

though I had previously bought a complete set of the instruments which the Americans used. But I was acquainted even at that time with the American proverb, "help yourself," and I did so.

Gentlemen, I have to tell you to-night that just you Americans are, so to say, to blame for the invention of the rotation method of filling with gold; for if I had not seen the beautiful fillings which came from the hands of your countrymen I would never have thought of producing something like them. I was inspired with the ambition to see whether I could not make such beautiful fillings. Although I know that this method which I have presented to you is not quite up to the mark, or not as perfect as I hope it will be in a few years, yet I believe it will have a future.

Gentlemen, I again bring you my warmest thanks for your generous appreciation and reception of this rotation method at the time when Dr. Rodecker kindly introduced it to the profession in this country, although some may have been against it. Gentlemen, I lay this rotation method before you; and I am sure that, with American skill, you will be able to produce the best results, and you will certainly be able to manipulate it to your own satisfaction. It is, I think, of the utmost importance to both the operator and the patient.

THE CHAIRMAN—Gentlemen, to resume the story of my journey home; after arriving in Brooklyn I was afraid to cross the city of New York, and to get to New Jersey I actually had to hire a balloon in order to get rid of my—I don't like to say, but must—my too congenial companions. And when I say that Dr. Walker was among the number you will all know why I dared not stop in New York. Now I would propose that we drink to the rising generation of dentists; and I will call upon Dr. Walker to respond.

DR. W. W. WALKER—Mr. Chairman and gentlemen, as Prof. Darby has said, I feel that it is our duty first to pay homage to our friend Dr. Herbst, who is our guest to-night, and it is a pleasure on my part, as I am sure it is with all of us, to pay that respect which is due to him. As he remarked recently at Dr. Bodecker's house that his baby had been rejected by a great many of his own personal and professional friends in Bremen and Germany, I am very happy to say that in this country we have received the baby that he has brought to us and have tried to nourish and care for it as it deserves so far. He has been received with honor by the society to which I

belong, and in which his name is enrolled as an honorary member, the First District Dental Society of the State of New York. He is now an honorary member of this New Jersey State Dental Society, and I am gratified that he has been elected to that position.

Dr. Kingsley has told you that in selecting his cabinet for the New York State Dental Society he had appointed me as the grand bouncer. With regard to that appointment I can only say this: that with Dr. Carr at the head of that committee, if we find anyone practicing dentistry in the State of New York without the proper credentials we will bounce him, and fire him into New Jersey, or into the State of Connecticut; possibly he may land in the State of Pennsylvania.

Gentlemen, owing to the lateness of the hour I will not attempt to say anything more, and I know you will excuse me from making any further remarks.

THE CHAIRMAN—I am happy to state that the balloon took me safely to New Jersey, and the first thing I saw when I got there was a list of the honorary members of our State Society; therefore I propose the toast, The Honorary Members of the State Society, and call on Dr. Bonwill.

DR. W. G. A. BONWILL—Mr. Chairman and gentlemen of the New Jersey State Dental Society, the guests here present, and our special guest; I do not know why I should be called out upon this occasion. Nevertheless, every man who has any individuality at all must necessarily have something to say on such an occasion as this.

I said pretty much all that I thought was proper and necessary to say at the time when the gentleman who is now your guest was our guest in Philadelphia, where we entertained him in the best manner we could, and where he cliniced in my office.

To the New Jersey State Society I have to say that really the only honor that I have ever received in America, so far as dentistry is concerned, or from dentists, has been at the hands of the New Jersey State Dental Society, by their making me one of their honorary members. For that, gentlemen, I am very grateful; although gratefulness is something that does not cost very much in this world.

With regard to the present occasion and the subject that has brought us together, I think you will grant that if anyone in this country should have an interest in it I should. It is very pleasant

for me to have an opportunity to extend to this gentleman the courtesy that he did not get from his own countrymen, and it is pleasant for me to see that my own countrymen, the American dentists, can do to a foreigner that they do not always do to their professional brothers at home. I am very glad to meet Dr. Herbst, because among all the men whom I have met in dentistry, I have found very few who showed more mechanical talent or more true mechanical genius than he himself possesses. While he has brought forward no great inventions, at least we cannot say so until we have tried them, yet he is a man who has had the courage to come here upon the invitation of his friend and the invitation of others to show us what he has, and what has been his conception as a mechanician, no matter whether it be much or little. He saw there was a necessity for something in German dentistry, and he went to work to fill that necessity, as we had attempted to fill it here upon an entirely different scale. Whether the plan upon which he has attempted to fill this need is the proper one or not remains to be seen. As for us, we have extended to him such a recognition and welcome as has not, in my memory, been extended to any other man in dentistry, either a foreigner or an American citizen. I am glad to have the opportunity of meeting Dr. Herbst and seeing him demonstrate and explain his method, notwithstanding the fact that the system he has adopted is directly antipodal to the one which I advocate and in which I am interested, that of the mechanical mallet. There is nothing that has come up in dentistry in the last twenty years that is so antipodal to everything I have done as this new method. Nevertheless, I have gone to see the gentleman and to witness his operations, and have tried to show him all the sympathy and encouragement I could. Whether we shall adopt this principle is another thing. What are we to do under the circumstances? Do we know whether he is right or not until we put our hands to the wheel and see whether we can successfully use this principle? Are we to consider that we have been asleep for twenty years like Rip Van Winkle? I cannot think that. So, whatever may be the result of this, I say, give us the next chance. Not only have I the greatest respect for this gentleman personally, but I have a high regard any man who has the courage to face the world. I extend to him my sympathy; and I made a proposition to him to-day that if he would take a set of the instru-

ments by which I insert gold fillings, and which is directly antipodal to his system, and give it as faithful a trial as I shall give his method, I would make him a present of them; I give him to-night the result of the whole of my work in the way of inventions for the last twenty years, a dental and surgical engine with mechanical mallet, trusting that he will do with them what we are doing here with his. He may find that there is something in it, that he has something to learn, and that we have not spent our time in vain. I present him all my works that I have had the pleasure, and sometimes the honor, of having done.

THE CHAIRMAN—Gentlemen, having arrived home once more, I now propose that we drink the health of the New Jersey State Dental Society; and I will call on Dr. Hayhurst to respond.

DR. J. HAYHURST—"The New Jersey State Dental Society." I am reminded of a conversation that occurred between a small boy and his mother. She said: "Johnny, you don't remember when you were born." And Johnny said: "Yes, I do; wasn't I there?" I remember when the New Jersey State Dental Society was born. I was there. Now the New Jersey State Dental Society is rather an anomalous creature; it is rather a polygamous concern; it has a great many fathers, and no mothers. That is rather curious. But it was born, nevertheless, about sixteen years ago, and has grown up to be a vigorous aud lusty lass, full of life and energy, full of the idea of good works; and while she extends her right hand to the States of Pennsylvania and Maryland, and left hand to the State of New York, she still has one member left, that is her tongue, with which she welcomes to her bosom our esteemed friend from Europe. She is about sixteen years old; and I do not believe that there is any State Society in the United States that has exhibited more life, more vitality, or a greater desire to do that which would reflect honor upon the profession of which she is a part; and she stands to-day protecting the profession in her State in more ways than any other State Society in the United States does. I believe I am right, Mr. Secretary, when I say that this was the very first society to place a restraint upon the illegal practice of dentistry in any State; she was the first society to proclaim that no person professing to practice the art and mystery of dentistry should practice it within her borders without the sanction of a diploma from a reputable college.

Therefore I say the New Jersey State Dental Society stands at the head in that respect; and she also stands at the head of the heap in extending her welcome to our esteemed brother from the other side of the water.

There has been much said, and well said, here to-night; but it is generally difficult in these after dinner speeches to make the points that you would like to, and might make if your stomach were not quite so full. On these occasions, through some disturbance of the brain, one always falls short of it; and I want to say that in this case, where we have been so well fed, and so admirably administered to in the matter of our thirst, you must expect those who speak for the New Jersey State Dental Society to fall somewhat short of what they ought to and would like to say. But I will give first place to no other State society in the United States in the stand that has been made for the elevation of the profession and for the purity of the profession in her jealous watchfulness over those who assume to practice it. We stand to-night the peer of any other society in the United States. In the name of the New Jersey State Dental Society we have to-night assembled to do honor to our professional brother from another land, to welcome him to our shores in a manner befitting the genius and zeal and earnestness which he has shown in his profession; and we trust that he may take back to his countrymen a good report of the New Jersey State Dental Society.

THE CHAIRMAN—Gentlemen, I have a toast to propose that I have reserved to the last, because it is nearest our hearts. It is, To Our Other Distinguished Guests. I will call on Dr. Atkinson to respond.

DR. W. H. ATKINSON—Mr. Chairman and gentlemen, my friend and Quaker brother here says; "Make it short." I take him as one of the representatives of the angel band that governs the intellections of my consciousness. You all know how truly I love this Society and the chickens of the old blue hen of New Jersey. You know how I have neglected my business, and how I have been abused, but that is no matter, to devote my time and energy to the study and dissemination of the true foundation principles upon which our practice depends in its cleanness and purity.

"Distinguished Visitors." We have one here to-night to pay especial honor to; and distinguished he is for his earnestness, for

his honesty of purpose, and for his professional skill. I know what I say. I was one of the first to meet this man and to investigate his work, having heard of him first by the hearing of the ear coming through an agent well loved in my heart, appreciated in my intellect and respected in my judgment, Dr. C. F. W. Bodecker, who had visited the star in the far east and had received the light pertaining to the mechanism of placing gold in a deteriorated tooth so as to make the best adaptation known on the planet to the walls of the cavity. You may imagine that it required some little restraint upon my enthusiasm to withhold my judgment until I found the practice was perfected in my own mouth, so that I stood at both ends of the problem, the ideal and the real, the conceptional and the practical operation by which the truth was revealed to me that the Herbst method stands *par excellence* as the exponent of the law of the adaptation of gold, or other material capable of welding, to the walls of a cavity so as to prevent the ingress of the swamp angels which incite the disintegrating process that we call decay.

It is well for men who attempt to pronounce judgments by which their fellows are supposed to be led to first be in possession of a concrete apprehension of all the principles governing their own minds when they make up the verdict. You, God bless you, my beloved, the advanced investigators of the planet, the dental profession at large, who are less environed by false dictum than any other category of men on this planet. I hail you as the *avant couriers* of the blessed truth from the Highest, that the redemption of the race may be accomplished through a convocation and concensus of the genius and ability of the dental profession at large.

The distinguished members of the dental profession was the toast to which I was to speak. If any man is distinguished for any excellence or any worth, it is he who stands in a receptive condition of mind and heart to listen to the teachings of the world of wisdom that reveals the truth in all the departments of planetary existence, the deflected operations of which lay the foundation for the necessity of the receptive process. Do you take, beloved of my heart and soul, do you take the moral significance, the measure of which shall mark your excellence in all that you do in obedience to "the inspiration of the Almighty that giveth man understanding?" As ye have the light, so walk ye in the light, with your little infant feet

stepping step by step in the line of progress, that has at this blessed hour revealed to us the dental profession as the tip-top blue blossom of the excellence of the divine love and wisdom, sent from the sphere of light to redeem the errors that have prevailed by false teaching on this planet from the time when Adam found fault with his condition and said, "I am alone," although Eve was a part of him; and the Lord said to him, "If you don't like it I will show you how you are;" and with a big sword he cut Adam and Eve in two, leaving one-eighth of the positive, Adam, on Eve, and one-eighth of the negative, Eve, on Adam, to polarize them toward each other by establishing a line of bonds of affinity by which they could be joined together again after awakening from the deep sleep in which they were, as recorded in Genesis. Time forbids me going into the details of the process by which this planet came into existence, and how evolution went on in the unfolding conditions through all the countless changes by which the dental profession has come to stand on the most elevated position of the divine afflatus, to receive the highest gifts of love and wisdom in the embodiment of the soul, that we may be redeemed from the errors of past false teachings, that we may come to the truth and walk in the light as we have the light in all the various departments that have ever been called scientific. But I may just say that in due time Adam and Eve awoke, and seeing each other prone as hemispheres, Adam saw Eve as a curve, a rib, upon which he said, "How high is dat?" to which Eve replied, "Ah, ha! how high is dat? What is dat I see?" and Adam says, "I understand all myself but one little piece." And Eve says, "Dat is my fix, too. Suppose you tell me what you do understand and I tell you what I do understand, and maybe we can fix tings." In the effort to join together and form a sphere again they came so near uniting as to allow the edges of each hemisphere to project slightly, leaving a jog on each side, the positivity and the negativity; they came so near being spherical that, on the law of bodies that are like charged repelling each other, they so nearly simulated the infinite as to be driven, as recorded in Genesis, from the presence of the Lord and the glory of his power with such vim as to be disrupted into the infinitessimal molecular mass of which this planet is composed, of the size of its present orbit; and, from that time until this, evolution, through the embodiment of love and

wisdom in manifold degrees, has established this planet and all its inhabitants by impacts of light, the catching and storing of which governs the classifications of mineralistic, vegetableistic and animalistic presentments, of which man in his present conformation is the culmination and microcosmic embodiment. If you could but see how all the molecular changes have occurred through all the past, you would respect the wildest egotism of him who has the illumination from on high to give you the truth as he sees it. God bless you, truth is not mine, nor thine, but ours. Let us strive not only to attain it ourselves, but let us resolve that all shall be blessed through love and wisdom, and try to see who best can work to that end, who best can grow in knowledge, that we may attain the truth and practice it day by day. Amen.

THE CHAIRMAN—Gentlemen, before we separate I cannot help expressing the wish that we may have the pleasure of seeing all of your faces here next year at this time, and I would ask the members of the New Jersey State Society to drink to that wish with me.

DR. HILL—Mr. Chairman, on behalf of the guests of the New Jersey State Dental Society I desire to express the wish that the New Jersey State Dental Society, and each and all of its individual members, may enjoy long life and the greatest prosperity.

DR. W. H. DWINELLE—Mr. Chairman, in response to the last toast I must needs say a few words. The gentlemen composing the Society are but the exponents and expression of the hopes of the profession in the present and the past. With regard to the past I cannot refrain from referring to those noble pioneers who contributed so much to make us what we, as a profession, are to-day. To-day we are the incarnation and embodiment of the hopes and prophesies of that devoted band of laborers who have preceded us. It is our habit to refer to ourselves almost exclusively on occasions like these, to talk about what we have done and what we are doing, and of our present stage of advancement; we are apt to forget that those who have gone before us though dead yet live, still live and look upon us from the embattlements of heaven, I trust, to-night. I cannot but refer to that grand array of earnest and self-sacrificing men, those noble pioneers who preceded us. I have in my memory the name of Chapin A. Harris, a name that has been referred to to-night most beautifully by the gentleman on whom his mantle has

been cast. He still lives and his memory is green with us. With prophetic vision he foresaw our present position. His hopes at that time seemed extravagant, but they have been realized, and to-night we have an expression and an embodiment of his hopes and desires. Noble man that he was, it is my pride to stand before you and say that I was associated with him in his labors for several years as co-editor of the first journal of dental science ever published. Grand, genial-hearted man that he was, peace to his memory. Let us refer to Elisha Townshend, a man who was the embodiment of what is expressed in the words, a courtly gentleman ; one who dignified our profession by his daily life and his nobility of soul. Also to E. B. Gardette, a polished gentleman who graced and glorified our art. God bless them ! Let us remember also the courtly and accomplished gentleman, Dr. Eleazer Parmly. He contributed to our profession the potency of his wealth, his high social position, his elegance of manner, and all that constitutes the true gentleman, at a time when we most needed them. He helped us in those early days to dignify, elevate and give respectability to dentistry. Let us remember, too, good Solyman Brown, his co-laborer and friend, whose son sits by me to-night, a noble son of a noble sire. He was one of the few of our profession at that early day who had acquired a classical education. He came and laid the contribution of his grand intellect at our feet. He was the *poet laureate* of our profession, and gave us "Dentalogia" and other poems, which will be read with profit and entertainment as long as our calling is known. Let us remember genial and generous Jahiel Parmly, a man who did much for the elevation of our profession. Noble and grand was he. He has gone to his fathers, but he still lives in his work and in our memories. He is still among us. There is no such thing as death. "Death is but life in other forms of being." There was Dr. J. H. Foster, of New York, modest, genial and gentle. He contributed much by word and pen to elevate and dignify our profession.

Gentlemen, it is proper that we should, in grateful memory, refer to the past and speak of the dead who yet live in their works, for we have seen here to-night the evidence of the fruition of what they hoped and labored for. Let us not forget them. The catalogue of

their names is not long, and had I time I would refer to them all. It is fitting that on an occasion like this, and on all occasions, we should acknowledge our obligations to the past and to the grand army of pioneers and martyrs who have gone before us. Ever green be their memories! Peace to their ashes!

Adjourned 3 A. M.

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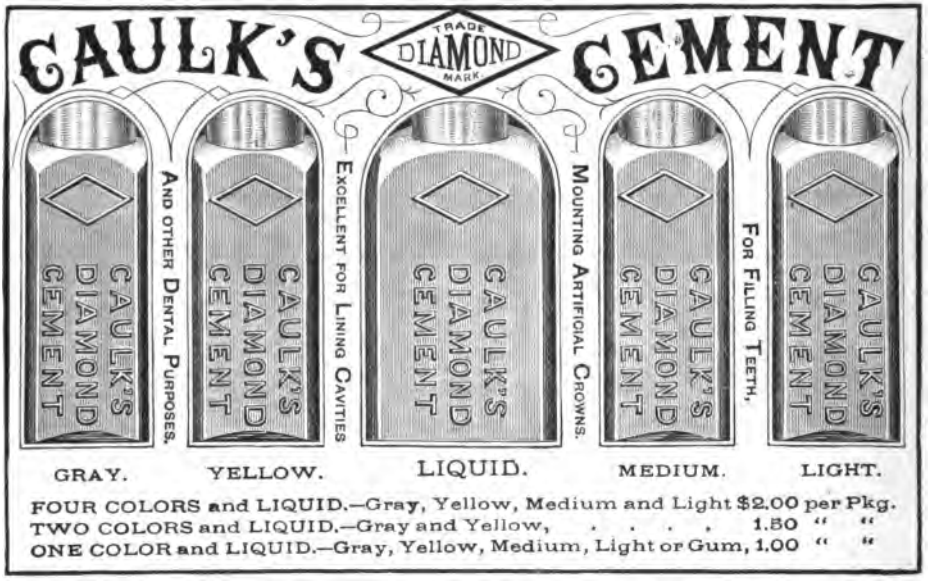

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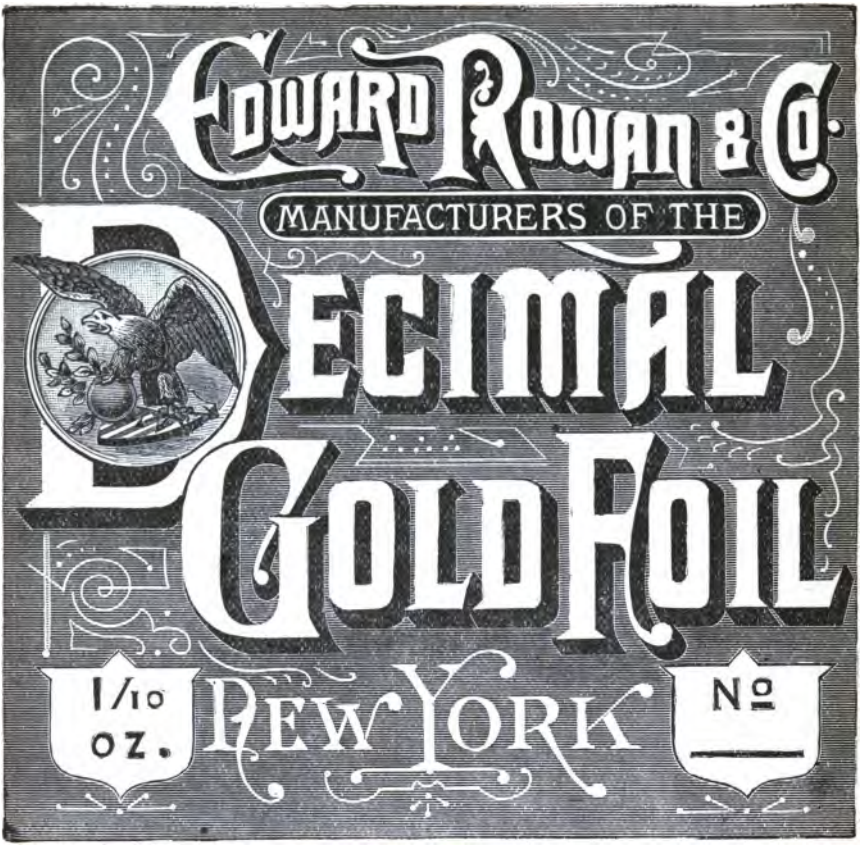

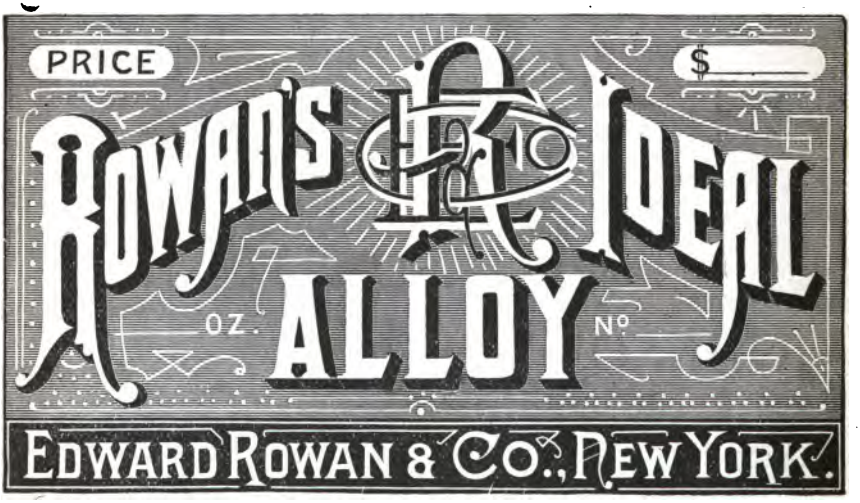

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